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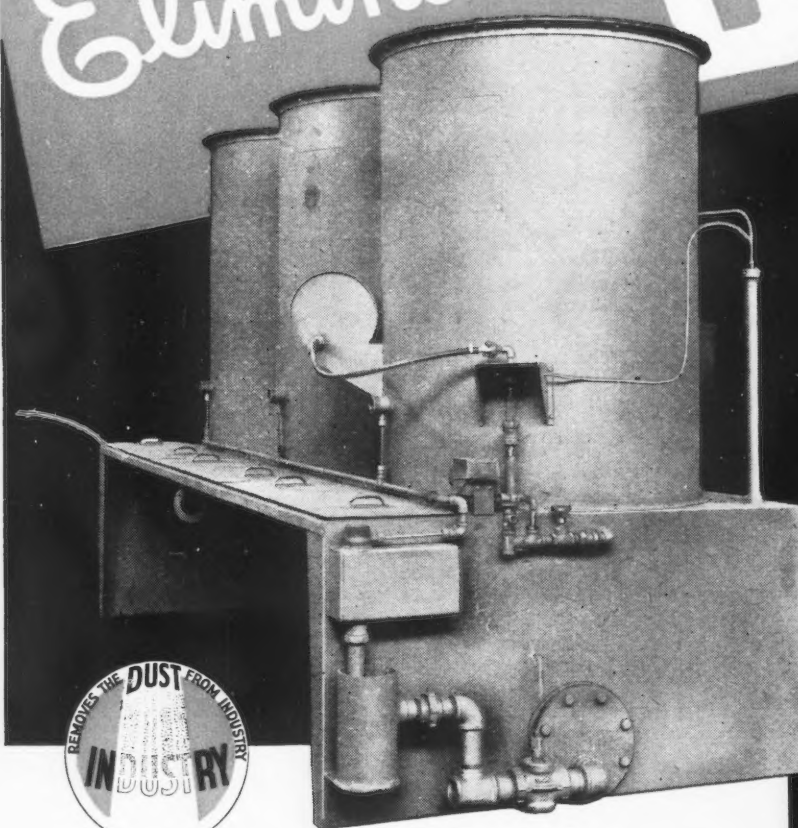
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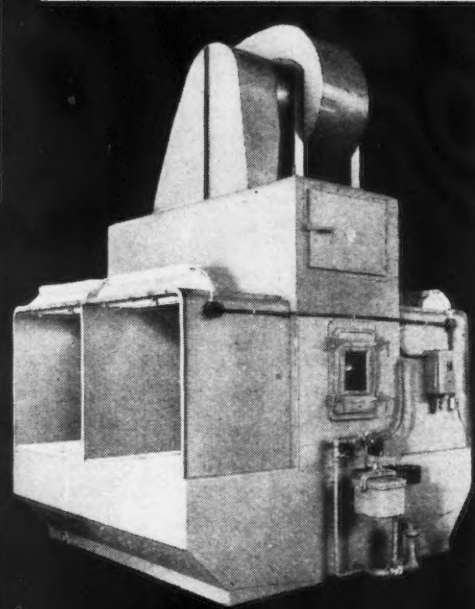
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## Choice of Weapons

**I**F wars could be fought according to the ancient and honorable code for the duel, the challenged would have his choice of weapons and both parties would be similarly armed. And the mortality of war would be substantially minimized, if as Mark Twain did in his immortal duel with the French editor, the challenged party suggested "brickbats at half mile range."

Unfortunately for a democracy such as ours, which must at times accept the challenge when offered but can never initiate it, the aggressor, whoever he may be, always has the advantage of the choice of time, place and means. And in these days, when scientists prepare the means of eliminating populations with atom bombs that each can destroy a hundred thousand persons, or lethal vials that each can wipe out hundreds of millions, the major possibilities of defense move from the machine shop to the laboratory and the time to prepare for it is reduced to practically zero.

Men of sense and particularly men of science, who by the very nature of their occupation must be men of particularly good sense, abhor war. And that abhorrence has been magnified immeasurably by the increase of the horribleness of its weapons and by the fact that all possible romance or chivalry has been squeezed out of it. For today, knight does not fight knight, or soldier, soldier, but winged demons of destruction hurl their destroying darts upon whole populations. Modern war is not merely murder, incorporated, but murder by mass destruction.

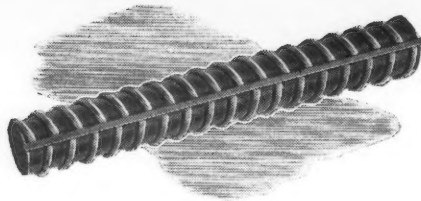
What is a peace loving nation like ours to do under these circumstances? First, it must and does, hope for the elimination of war through the universal recognition of its futility and the successful operation of international control through the United Nations. If that does not work, then nothing will in our time.

Second, it must be practical enough to recognize that human nature cannot jump from the lower to the higher ethical plane overnight but must pull itself up by laborious and time consuming effort. And that in the interim lie the danger and the necessity for defense.

Modern war and defense have outgrown departmentalization. At the beginning of the first World War, there were probably less than 100 ordnance officers in Washington and in a handful of arsenals who had charge of the design and development of our munitions. During the last war, the resources of American civilian science and industry were combed to cope with the tremendously magnified effort. The public now knows some of the wonders that emerged from this: the atomic bombs, the ability to see in darkness through the "snooperscope," the proximity fuse, the rocket missile, radar and its many applications, etc. But there are more wonders that the public does not yet know of and won't know until the time comes for it to know, and let's hope that will never be.

Lest it should be, however, we must not merely remain strong but become stronger, until we are certain it will never be. And that strength can only come from continued contact by our War Department with civilian science. It was for that reason, as announced on page 95 of our preceding issue, that the design and development of munitions have been moved from ordnance to the top general staff level and put under the extremely capable direction of Major General Henry S. Aurand. One of his principal duties is to see that Uncle Sam retains, for defense, the best abilities of American science and industry. And one of our principal duties is to see that he gets them.

*J. H. Van Deventer*



# Construction Industry Gains by Inland Action

*New Licensing Program Increases Availability  
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Inland Steel Company, realizing the tremendous demand for its Hi-Bond Reinforcing Bar for necessary post war construction, is granting licenses to other steel manufacturers to make this greatly improved reinforcing bar. We believe this announcement will be good news to thousands of architects, engineers, and contractors.

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# **INLAND HI-BOND**

## **CONCRETE REINFORCING BARS**

- ▶ Scrap supply may be tight for years if the present operating rate continues. Millions of tons were blown up and wrecked on the battlefield; other millions of tons of ingots were shipped abroad and their discards will never see an American furnace. The accumulations of decades were cleared out in 1942 and 1943. Ore reserves are falling though new fields will be exploited.
- The answer appears to call for a new approach to scrap collection if the steelmakers are to supplement their ore supply with good grade scrap.
- ▶ A British firm recently succeeded in rolling a magnesium alloy ingot into a bar on a standard steel rolling mill without any special equipment.
- ▶ Indications are that steel exporters will find their fourth quarter license applications cut to approximately 25 pct of the amount requested. Since some export houses had the full amount on mill rolling schedules it is possible that the unexportable 75 pct will become the target for export houses which secured licenses for more steel than they can get from mills.
- ▶ One of the prime requirements of Army Ordnance is a line of heavy duty hand and machine tools incorporating minimum weight and overall size with maximum utility and durability for use in mobile repair shops.
- ▶ So rapidly is electronic research proceeding at Aberdeen Proving Grounds that formal reports are not being written. They would be obsolete before they could be printed.
- ▶ Known as Little Bright Eyes, a new ballistic research camera photographs a V-2 rocket at 30 miles so perfectly that the image occupies half of a 30mm film.
- ▶ Swedish alloy steel producers who once were happy enough to maintain good relations with only a few large foreign consumers are now re-arranging their distribution pattern. Faced with the threat of American progress in producing highest quality sheet and strip steel, they are seeking a broader range of consumers and are taking into consideration geographic as well as product distribution.
- ▶ Production of several metal housing items climbed to new peaks in August, according to CPA data. Sinks soared 36 pct for an all-time high; bathtubs were boosted 27 pct, the best since 1941; lavatories and bowls boomed up 20 pct; and nails nudged up 18 pct, tacking up a new record for the year.
- ▶ The chances for returning much ferrous and nonferrous scrap from the Pacific war areas are considerably dimmed by Chinese acquisition of practically all surplus property in the Pacific. The Navy is also thinking of working ferrous scrap into bars for reconstruction work and may also convert scrap aircraft into secondary aluminum ingot on the spot.
- ▶ What is believed to be the largest magnesium die forging in this country was revealed last week by Wyman Gordon Co. It was forged in dies built primarily for forging a jet engine impeller in aluminum but it is now known that several jet engine builders are making tests looking to use of magnesium instead. Weight of the 12-in. thick, 30-in. dia. forging is 300 lb in magnesium and 460 lb in aluminum.
- ▶ By combining into a production line arrangement an armor plate straightener and a new type fully automatic slab and billet grinder, an eastern steel producer has cut stainless slab preparation costs nearly \$15 a ton. Further refinement of the equipment may even better this figure.
- ▶ An aluminum solder that can be applied at temperatures low enough to use gas or electrically heated soldering irons has been developed. It is claimed that joints made can be further rolled without breaking the bond, and the only preparation needed is cleaning of the joining surfaces with wire brush or acid.
- ▶ Both Russia and Sweden are courting Italian steel interests to line themselves up for Mediterranean markets. The former proposes to supply coal and ore in return for steel to be used for machinery, railway equipment and merchant ships. The Swedish group would furnish drawings, specifications and management and would tie in with consumer agreements to market typewriters, razor blades, sewing machines and Swedish machine tools in Mediterranean markets. Italian industrialists appear to favor the Swedish proposition. Rumors of American interest are still in the wind.
- ▶ T. F. Kearns of General Steel Products Corp., New York, will lick the meat shortage for his 150 workers for some time to come. He has ordered 38 Hereford steers from a Texas ranch for his employees.





# The Case for 100

By JUSTIN G. SCHNEEMAN  
Director, X ray Products Laboratory,  
Los Angeles, Calif.

**Advantages accruing from the use of 100 pct X ray inspection of aircraft castings, in which radiographs are combined with fluoroscopic examination, are discussed in this article. The author, a wartime member of the National Research Council on X ray inspection, stresses the relationship between safety and adequate inspection procedures and examines in detail what he describes as the erroneous assumptions involved in percent-age examinations.**

THE aircraft industry, like many others born of war mass production, is going through a period of readjustment from large to relatively small production requirements and, in many cases, from military to civilian types of aircraft. One of the major phases of this adjustment is an economic one, that of producing safe aircraft in relatively small quantities at competitive prices. Inspection of materials and workmanship is well recognized in the manufacturing industry. In the case of aircraft, however, this inspection must of necessity be much more rigid and consistent than for many other types of products.

Once the airplane structure is as sound and safe as it can be made, then failures of performance of the product will be at a minimum and studies of other factors, such as personnel and weather, affecting the safety of an airplane will have considerably more value. The purpose of this article is to discuss only one phase of inspection in the manufacture of airplanes, that of the X ray inspection procedure now employed in quality control of ferrous and nonferrous aircraft castings.

In the general construction of aircraft, castings play an important part because of their intricate shape and design possibilities. Once a casting for a particular application has been designed, it can easily be

reproduced without the cost of expensive dies and tools which would be necessary to make these same parts out of fabricated materials. Since peacetime quantities of production on most parts are very small and changes in design during the next few years may be rather numerous, it should be obvious that the cost per unit of airplane would rise very rapidly if the cost of dies and other tooling were of a prohibitive nature. Also, changes in design are much more readily made on a sand cast product than on a permanent mold or fabricated part requiring extensive tooling.

Recognizing the need for light weight and strength, many new types of aluminum and magnesium alloys have been developed which give the designer of castings an even greater opportunity to reduce the weight of castings to an almost unbelievable degree. It then becomes apparent that with a low overload safety factor and the use of high strength and light weight materials, the process of thoroughly inspecting the internal structure of such castings must be complete.

The major, and today the most reliable, tool for observing the internal soundness of castings is the X ray. Unfortunately, the use of this tool, because of the erroneous belief that it is too costly, has been abused and, if the trend in this direction continues, radiography will become a phrase rather than a means of complete inspection.

# 100 Pct X ray Aircraft Castings . . .

The improper use of X ray lies in the manner in which it is employed. All through the war and today aircraft castings for the use of military aircraft have been and are being inspected according to an inspection system which divides the castings being used in a particular plane into one or more groups. These groups are arrived at by classifying each particular casting according to its inherent design strength and its place in the airplane, or both. For the purpose of this paper, these groups may be referred to as A, B and C.

All castings falling into group A are considered the ones most highly stressed and it is mandatory that at least 25 pct of any one lot of these castings be radiographed. In other words, if a foundry produces a lot of 100 castings, it will be required to submit 25 of these castings for X ray examination. This examination consists of making radiographs of all sections of these 25 castings. If it is found that these 25 castings are suitable for use, then it is to be assumed that the balance of the lot are as sound as the first 25. This conclusion is a most erroneous assumption.

Castings regarded as class B are subject to only 10 pct inspection on any one lot. Thus, out of 100 castings only 10 need be radiographed and if found acceptable it is presumed that the remaining 90 of the lot which have not been X ray inspected are as safe and sound for their particular application as the first 10. This is, again, a completely wrong assumption. Group C consists of castings which require no X ray inspection because they are used in applications where failure would not impair the functional use of the airplane. Therefore, castings belonging in the C category may be disregarded for the purpose of this discussion.

Since this is the system and X ray inspection costs money, although the cost in comparison to the final cost of the airplane is a very negligible amount, at least one manufacturer has gone so far as to raise the odds in favor of unknowingly assembling defective castings into their airplanes. In this instance, the percentage X rayed is considerably less than 10 pct and becomes less and less as the quantity of the lot of castings increases.

In addition, one system goes so far that when defective castings are found in the first sample, the effect of this finding as to the balance of the castings may be neutralized by taking another sample. Another system is being employed where the number of defective castings in the first 25 pct of the lot may be as high as 5 pct and still not require that the balance of the lot be X ray inspected.

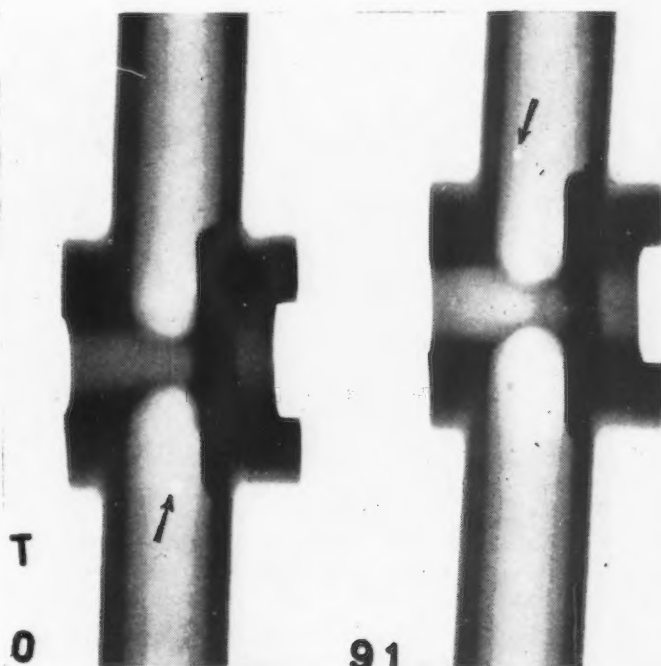
It should be mentioned here that under the

regular X ray inspection system, it is mandatory to completely X ray inspect the balance of any one lot if defective castings to the extent of 1 pct or more are found in the first 25 or 10 pct X rayed. But observe that only if defective castings are found in the first representative sample lot need additional X ray inspection be made.

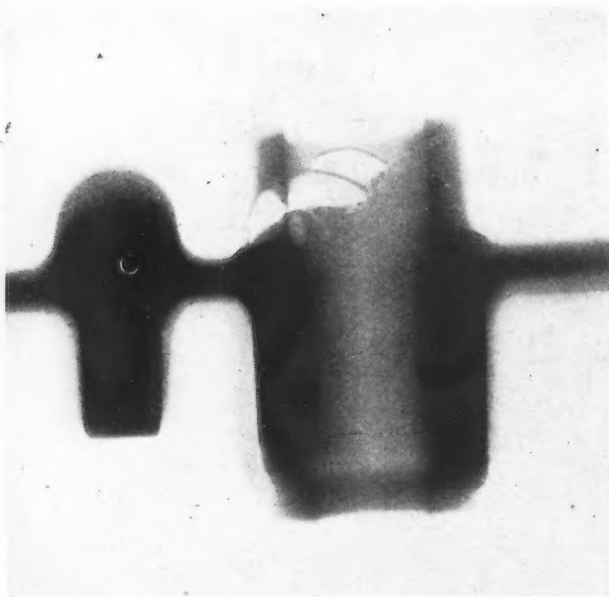
The end result of this haphazard system of X ray inspection is that seriously defective castings must without question get into the finished airplanes. Since most castings are radiographed in a raw state it must be granted that some of these defects may be discovered during subsequent machining operations. On the other hand, there are, no doubt, defective castings in the air which one day will collapse because of simply being too weak to do the job.

These castings may be anything from brake pedals to landing gear supporting mechanism, landing gear controls, rudder or stabilizer parts, pulley brackets and motor mounts. If castings were transparent as some plastics or glass, it would be a simple matter to tell good from bad but since they are not transparent, there is only one way to make certain and that is to completely X ray inspect each and every casting whose failure in service will impair the functional safety of the airplane.

The importance of complete X ray inspection of all highly stressed castings is greater now than during



Minor defects discernible in fluoroscopic examination.



**A** N actual example of a defect in an aluminum casting not revealed by a percentage x ray inspection.

the war. First, while converting to civilian production, price competition may have a tendency to reduce inspection costs and, secondly, the method used in producing castings in relatively small quantities dictates the employment of foundry methods subject to a larger percentage of uncontrollable defects.

During the war, the unreliability of percentage X ray inspection was quite apparent to some aircraft manufacturers and some of them on their own initiative X ray inspected most of their castings 100 pct even though their specifications required only a percentage inspection. This made it possible to produce safe airplanes during a period when price was a secondary consideration.

It was quite popular during the war to make aircraft castings by the permanent mold process. The permanent mold process, once properly adjusted, produces a casting much more uniform in quality than that made by sand methods, the only drawback being that the permanent mold process requires large quantity production to absorb the high cost of the metal molds used in this process.

The sand cast method is a much cheaper method of making castings where small quantities are involved. Pattern changes are generally much less costly than when trying to redesign or rebuild a steel mold for the permanent mold method. However, since the sand cast method is largely a hand process, internal defects are much more common than in the permanent mold method. This is especially true where the size and shape of the casting is such that no foundry can guarantee each and every casting to be commercially perfect unless they are given X ray eyes to look inside of the casting.

Such X ray eyes are available in the form of radiographic X ray machines and fluoroscopic X ray machines. The proper combined use of these two tools will provide for complete X ray inspection of every casting at a cost<sup>1</sup> of no more than the present haphazard percentage X ray inspection procedure. Fur-

ther, it will be found that once a 100 pct system of X ray inspecting such castings is used, the radiographic requirements can be reduced and the fluoroscopic

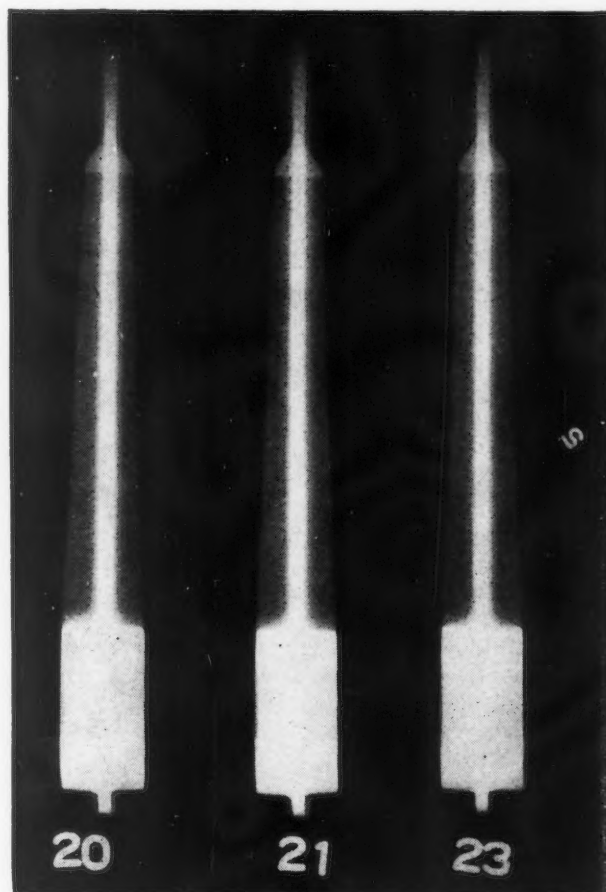
<sup>1</sup> A discussion of the cost of 100 pct X ray inspection of aircraft castings, combining radiographs and fluoroscopic examination, is presented in the article "Radiographic and Fluoroscopic Interpretation of Casting Irregularities," THE IRON AGE, May 2, 1946.

inspection method used in such a manner that a 100 pct X ray inspection will cost even less than the present haphazard system.

Whatever argument is used to justify today's method, whether it is that of wanting a permanent record, a radiograph of castings inspected, or whether it is the argument of excessive inspection costs, or perhaps the argument that fluoroscopic inspection does not give the same high definition of the image as a radiograph, it can be completely disproved by the fact that no record at all exists, in today's system, of the castings not radiographed, and that existing records consisting of millions of radiographs, are seldom if ever referred to once the radiographic examination has been made.

The overall costs of this inspection, if properly performed, is less for a complete X ray examination system as against a present percentage system. Fluoroscopic definition of modern X ray equipment is more than sufficient to weed out castings with rejectable defects in accordance with present standards of acceptance by the major aircraft companies.

Typical defects easily discovered by fluoroscopic examination.





# Torque Values for Standard AN Bolts and Nuts

HIGHER operating speeds, and the tendency towards reduced unit weight on modern equipment of all types has directed closer attention to the importance of applying proper torque values when tightening nuts and bolts. To establish definite torque limits for the size bolts most commonly used in aircraft construction, Consolidated Vultee Aircraft Corp. conducted a series of tests based on standard AN nuts and bolts with the objective of setting standards which would satisfy the design requirements and be safe with respect to the strength of the material.

Sample bolts were set up in standard testing machines, and shank stresses of 105,000 to 119,000 psi, and root stresses of 134,000 to 157,000 psi were obtained in the bolts when the threads sheared to failure under applied load in tension. Lower and upper torque limits of 30,000 and 50,000 psi were then established as being practical from past shop experience and as being conservatively safe with respect to the ultimate strength of the material.

Two different groups of tests were conducted. For the first group the torque was applied to the nut, and for the second group to the bolt head. In each group four different sets of conditions were established, corresponding to different applications. In the first case, no washers were used under either the bolt or nut, and no lubrication was applied to the threads. In the second case, washers were used but lubrication was omitted. In the third case, washers were omitted, but vaseline was applied to the threads, and in the fourth case, washers were used and the threads lubricated.

As a result of the tests, definite torque limits were established, as shown in table I, for the commonly used sizes of bolts from 1/4 to 1-in. diam. The bolts were all standard AN steel bolts rated at 125,000 psi, with NF3 threads. Castle head nuts AN310 and steel washers AN960 were used. It will be noticed that in each case the torque values to be used when torquing

the nut are substantially lower than when torquing the bolt head. The necessity for this was shown by the fact that in all the tests the threads inside the nut sheared to a greater extent than the threads on the bolt.

Table II shows the average percentage torque to produce a 30,000 psi root stress in all sizes of bolts, and shows very clearly the effects of washers and lubrication, as well as the difference occasioned by torquing the nut as against torquing the bolt. These same percentages also apply for a 50,000 psi root stress. The torque in inch pounds is reduced when using lubrication primarily because the friction is less between the contact parts of the nut and plate. Consequently, with less friction, a higher stress would be set up in the bolt as compared with the same applied torque with no lubrication. A greater torque in inch pounds is required to produce the same stress when torquing the head of the bolt than when torquing the nut. A tension stress due to tightening occurs in both methods, but more torque stress is distributed through the length of the bolt when torquing the head than when torquing the nut.

TABLE II		
Average Percent Torque to Produce 30,000 Psi Root Stress in All Sizes of Bolts		
	Condition	Pct
Torquing nut.....	no washers, no lubrication.....	100
Torquing nut.....	washer at head and nut, no lubrication.....	97
Torquing nut.....	vaseline lubricated threads, no washers.....	63
Torquing nut.....	vaseline lubricated threads, washers.....	61
Torquing head.....	no washers, no lubrication.....	115
Torquing head.....	washer at head and nut, no lubrication.....	112
Torquing head.....	vaseline lubricated threads, no washers.....	72
Torquing head.....	vaseline lubricated threads, washers.....	70

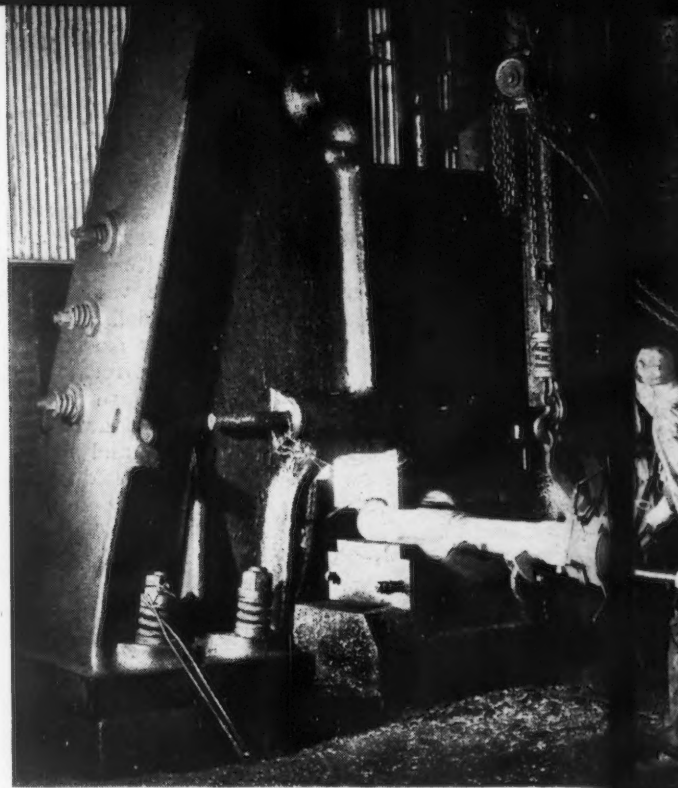
TABLE I										
Recommended Torque Values for Standard AN Bolts and Nuts										
Bolt Size, In.	1/4	5/16	3/8	7/16	1/2	9/16	5/8	3/4	7/8	1
Torquing of nut										
In.-lb at 30,000 psi root stress.....	55	95	210	370	540	710	910	1360	1920	2870
In.-lb at 50,000 psi root stress.....	85	150	350	590	830	1080	1360	2050	2970	4800
Torquing of nut, washer at head and nut										
In.-lb at 30,000 psi root stress.....	50	90	205	355	520	690	885	1310	1840	2750
In.-lb at 50,000 psi root stress.....	80	145	340	570	810	1060	1340	1975	2860	4700
Torquing of nut, vaseline lubricated threads										
In.-lb at 30,000 psi root stress.....	40	65	145	250	360	480	610	895	1220	1660
In.-lb at 50,000 psi root stress.....	65	105	240	400	565	740	925	1360	1865	2560
Torquing of nut, washer at head and nut, vaseline lubricated threads										
In.-lb at 30,000 psi root stress.....	40	60	140	230	340	450	585	870	1200	1610
In.-lb at 50,000 psi root stress.....	60	105	230	380	540	710	895	1310	1810	2490
Torquing of head										
In.-lb at 30,000 psi root stress.....	60	105	245	425	635	850	1090	1600	2225	3240
In.-lb at 50,000 psi root stress.....	95	160	380	670	985	1300	1630	2395	3440	5340
Torquing of head, washer at head and nut										
In.-lb at 30,000 psi root stress.....	60	105	240	410	610	820	1045	1570	2170	3160
In.-lb at 50,000 psi root stress.....	90	155	370	640	945	1260	1585	2310	3310	5200
Torquing of head, vaseline lubricated threads										
In.-lb at 30,000 psi root stress.....	45	75	170	280	410	550	695	1035	1400	1885
In.-lb at 50,000 psi root stress.....	70	115	270	450	640	850	1070	1555	2105	2900
Torquing of head, washer at head and nut, vaseline lubricated threads										
In.-lb at 30,000 psi root stress.....	45	75	160	270	395	530	675	995	1360	1835
In.-lb at 50,000 psi root stress.....	70	115	265	440	625	835	1055	1530	2070	2850

By R. E. PENROD  
*Engineer of Tests, Johnstown Plant,  
Bethlehem Steel Co.*

CONTINUING a modernization program which was under way at the start of the war, Bethlehem Steel Co. has made a number of major improvements in the axle-manufacturing facilities of its Johnstown, Pa., plant. New equipment added includes a continuous rotary-hearth heating furnace, a number of gas-fired pits for control cooling of finished forgings, an axle straightener of novel design, and a number of minor auxiliaries. Three new buildings have been added, and the lay-out of the plant has been improved to give an efficient, uninterrupted flow of material from the bloom storage to the final shipping platform in the machine shop. The entire narrow-gage track system has been removed and replaced by concrete roadways and tractor-driven trailers now serve the entire area. A complete set of new conveyors carry the stock from one operation to the next. The accompanying photographs illustrate some of these new facilities.

The plant makes all types of standard and special axles for passenger and freight cars, locomotives, street-railway and mine cars. It also produces armature shafts for electric locomotives, crank pins, and piston rods. Rounds and special forgings are produced in lengths up to 126 in. and 16-in. diam. In addition to standard machining facilities, the plant is equipped for overall grinding of special axles up to 10 in. diam and for production of hollow axles. Axle stock is rolled in multiples directly from ingots in the Franklin division of the plant and is delivered to the storage yard at the axle plant in standard railroad cars, where it is unloaded by magnet hoist and stored in steel racks according to size and grade.

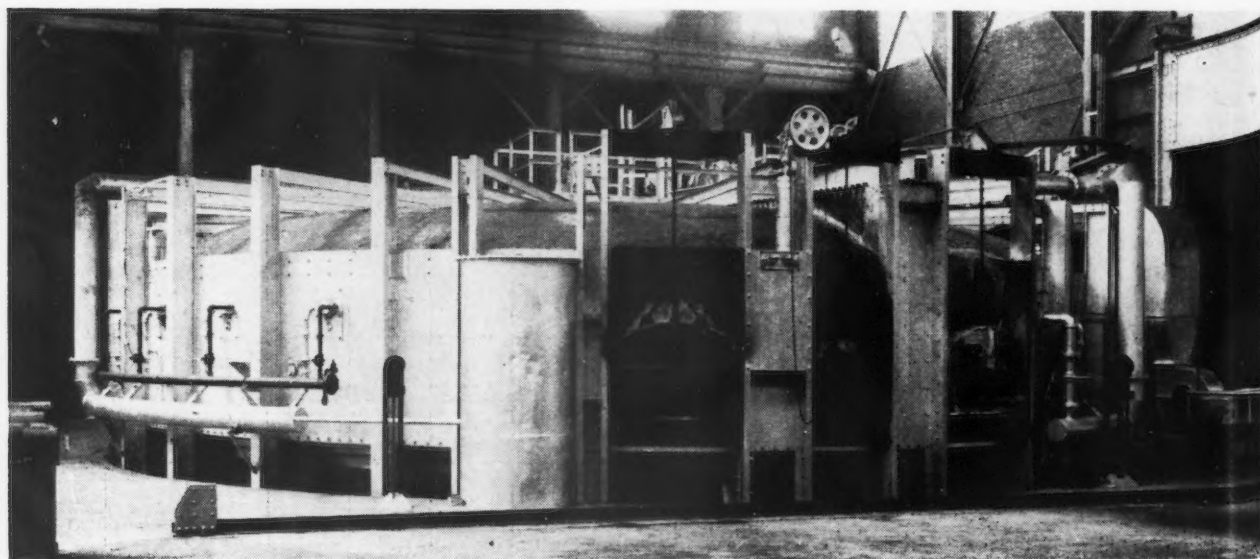
The heating furnace is of the rotary hearth type of 50-ft OD and a hearth  $11\frac{1}{2}$ -ft wide and of 98-ft effective length. It has an hourly capacity of 25 tons. The furnace burners are arranged in three groups,



● Forging railroad axles 100-lb. s

## Bethlehem Axle Pl

with separate combustion controls, to give a preheating, a heating and a soaking zone. Two doors, one for charging and one for discharging, are placed side by side, separated by a baffle wall. They are both controlled from the manipulator cab. Three smaller doors are available for inspection and for removing scale from the hearth. Combustion gases flow counter-current to the steel, and are taken off at the charging door, on each side of the hearth, through an underground flue leading to a 100-ft stack. Both the combustion and the draft are automatically controlled.







axles on 10-lb. steam hammer.

## Plant Modernized

A rotary type furnace offers important advantages in heating axle blooms for forging. The blooms are not pushed ahead, but remain undisturbed on the hearth during the entire heating cycle. As they do not touch adjacent blooms at any point, they come in perfect contact with the hot gases around the entire circumference, and there are no water-cooled skids to cause uneven temperature in the steel.

Regular furnace routine is to charge a cold blank and then remove a heated one, placing it on a steel stand with saddles spaced to receive and position it

**Recent major improvements at the Johnstown axle plant of Bethlehem Steel Co. include a continuous rotary-hearth furnace, gas-fired pits for controlled cooling of forgings, an axle straightener of novel design and a number of minor auxiliaries. These new facilities, plus several new buildings and improvements in plant layout, provide a highly efficient, uninterrupted flow of material from bloom storage to shipping platform.**

properly. As the blanks are needed at the hammers they are picked up by two 2-ton gasoline-driven utility trucks, which hold them in a horizontal, lengthwise position with about two-thirds of the length protruding to permit easy insertion in the forging dies.

Three steam hammers are used for forging standard axles, one 8000-lb and two 10,000-lb units. The hammers are all equipped with double-impression dies, one impression for journal and dust guard, and one impression for the barrel. The latter impression is made one-half of the length of the barrel, thus making it possible to forge a barrel of excellent contour, a system of forging developed at Johnstown which aids materially in improving the quality of the forgings.

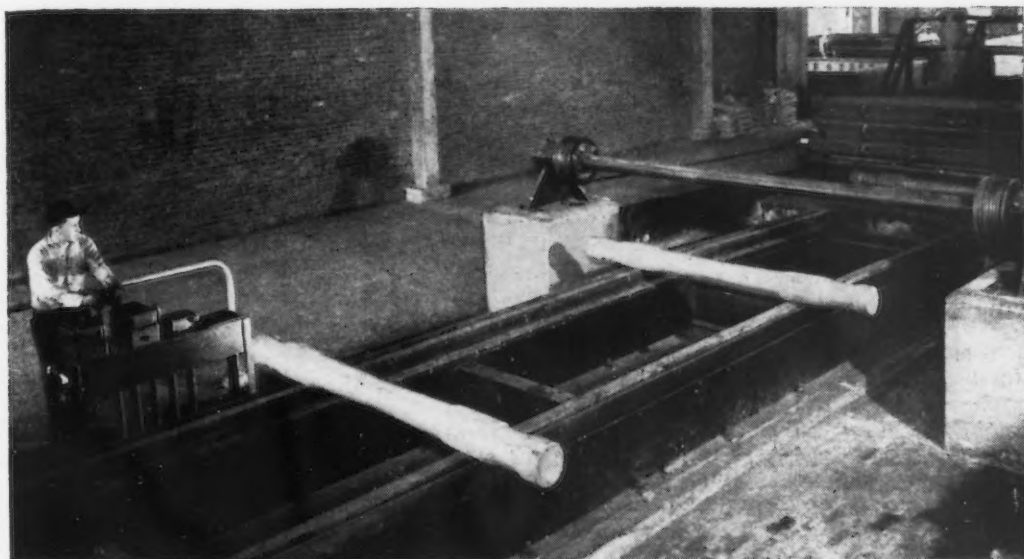
In addition to the three hammers described, a 15,000-lb hammer is available for forging driving axles and other specialties. A special stationary type heating furnace, equipped with a regular charging machine, is used in connection with the larger hammer. This furnace has been extended by about one-third its original length, to allow longer time for preheating alloy steels and other special grades.

From the hammers the forgings are carried by overhead monorail trolley to a trough-type chain conveyor, 66-ft long, operating at a speed of 80 fpm. Here they move lengthwise onto a receiving bed where a 29-ft

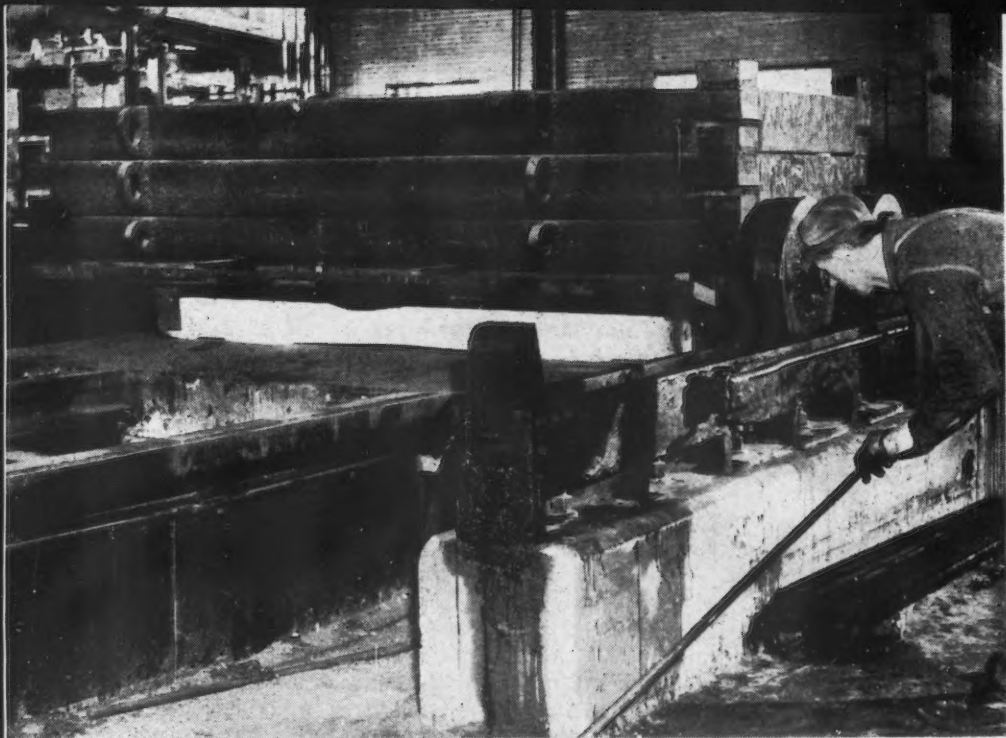
LEFT  
CONTINUOUS rotary-hearth furnace for heating axle blooms prior to forging.

o o o

RIGHT  
AXLES moving on a conveyor to the straightening machine.







**S**TRAIGHTENING standard freight car axles in the newly installed straightener.

roller-type conveyor, placed at a 90° angle to the chain conveyor and operating at 60 fpm, takes them to the straightener. This method of conveying prevents the axles bumping against each other.

The straightener, which has replaced the gag press formerly used, consists of a flat anvil, across which moves a 25-ton platen equipped with an insert at the center shaped to conform to the central section of the axle. As the conveyor deposits the axle to be straightened on the anvil, it rolls up against the platen which then is started moving slowly in the opposite direction, with the full weight applied on the axle as it rolls it. When the axle has completed one full revolution it is fully straightened and passes under the platen. As it is released on the opposite side it rolls by gravity down the slightly inclined anvil onto a 25-ft chain conveyor. Each axle is held separately in the conveyor and revolves slowly around its axis as it moves along. This prevents sagging or warping and permits it to cool at a predetermined rate. The speed of the conveyor is regulated according to the size of the axle and the cooling rate desired.

After the preliminary cooling on the conveyor the axles are ready for controlled cooling in pits of 25- to 28-ton capacity, arranged in five batteries of two pits each and one battery of three, 13 pits in all. The conveyor discharges the axles to a cradle, accommodating 10 standard axles, and the loaded cradles are picked up by a crane equipped with a special spreader rig and placed in the pits. The pits are 11 ft x 9 ft 5 in., with 7 ft 10 in. effective depth and are equipped for firing with coke oven gas for preheating prior to charging the axles.

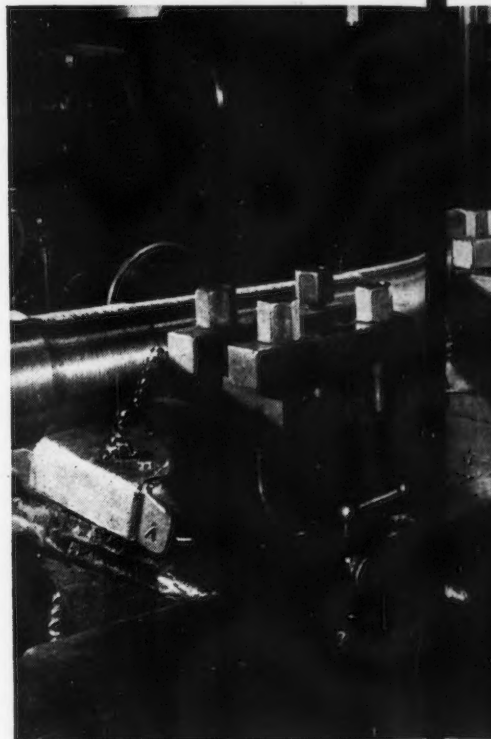
After cooling, the cradles are lifted out of the pits and placed on a fixed bed where they drop away from the load. As the axles roll free they are picked up by crane and taken to the stock yard prior to machining.

No important changes have been made in the machining department since it was modernized and expanded a few years ago. An outstanding feature in the finishing building is the arrangement of the machines in parallel rows the full length of the building.

First a row of cutting-off and centering machines, then the journaling lathes, then the shipping beds and finally the end-driven lathes. Electric hoists on monorails run the full width of the building. This arrangement permits continuous, straight-line processing of the forgings as they move from one machine to the next.

Carbon and alloy steel axles and special forgings which require heat treatment are handled in two automatically controlled furnaces fired with coke oven gas, each having 443 sq ft hearth area. These were also installed a few years ago and have not been changed. Treatment selected may be one of three types.

When annealing is called for the cold forgings are first heated



to the predetermined temperature for refinement of the structure. After soaking they are cooled down in the furnace to well below the critical point, when they are removed from the furnace and transferred to a cooling bed. When forgings are normalized and tempered, the cold forgings are first heated to the predetermined temperature and allowed to soak. They are then removed from the furnace and cooled in the air, keeping them well separated so they do not touch at any point. When they are almost down to room temperature they are returned to the furnace where they are slowly brought up to the prescribed drawing temperature. After thorough soaking they are cooled down with the furnace and finally placed on a cooling bed.

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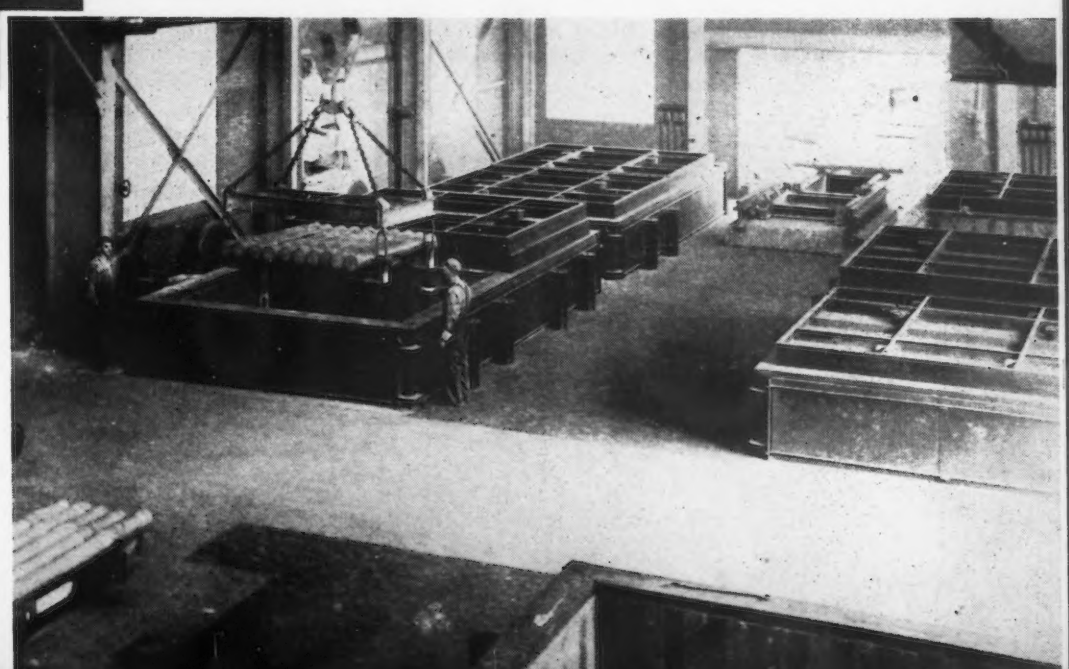
In the production of quenched and tempered forgings the procedure is the same as used in normalizing, up to the point where the forgings are removed from the furnace. They are then quenched in water or oil, immediately recharged to the drawing furnace, heated slowly, soaked, cooled down with the furnace and finished on a cooling bed.

The quench tanks are arranged immediately in front of the furnaces. The axles are dropped, one at a time, on revolving rollers which are lowered into the quenching medium. Revolving the forgings as they go into the quench provides uniform cooling and insures straighter axles. The revolving is continued during the entire time of immersion, and the quenching medium is agitated by a circulating system.

New buildings added during the present extension program include a furnace building, 109x156 ft, served by a 15-ton crane on 105-ft span; a cooling pit building, 50x115 ft, with a 10-ton crane on a 46-ft span; and a 48x95 ft addition to the forge building, housing the straightener and auxiliary conveyors and equipment.

ABOVE  
TAKING a rough cut on  
a passenger car axle.

RIGHT  
PITS for controlled cool-  
ing of axles.



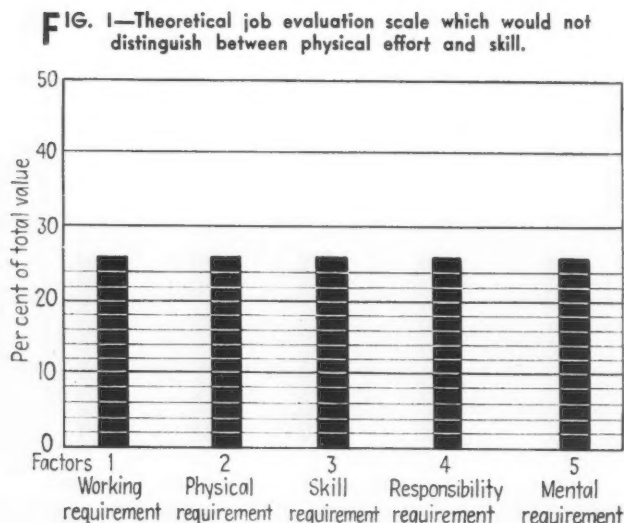
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# Job Evaluation Scales

By BENJAMIN P. HAMILTON  
Jacobs Aircraft Engine Co.,  
Pottstown, Pa.

**A recent study of job evaluation scales used by various companies and industrial associations is analyzed in this article. This study emphasizes the need of adequate factual support for the construction of an evaluation scale and points out the need for refinements in methods used to establish such scales.**



**E**XAMINATION of existing job evaluation scales by the management of the Jacobs Aircraft Engine Co. spotlights many of the important differences that exist between typical companies and industrial associations. It has been found valuable, in constructing a sound job evaluation program, to understand the methods used and the results obtained in a wide range of industries. In particular, the present examination emphasizes the scale of job difficulty values as the necessary framework of any evaluation system.

The soundness of every job evaluation plan is closely tied to the scale of difficulty values that it uses in measuring the individual job. Accordingly, the adoption of an existing scale or the construction of a scale positively qualified to evaluate the jobs of any industry or company deserves careful attention.

As a result of surveys by the National Industrial Conference Board (1937) and more recently by members of the Jacobs Co., evaluation panel, it is apparent that approximately 90 pct of all job evaluation scales, including the scales of companies using the more successful evaluation plans, are built around five job factors which are found to some degree in every manual or mental service and which in general scope include all probable difficulty values of any job. These five factors are:

- (1)—Working requirement (includes exposure to accident)
- (2)—Physical requirement
- (3)—Skill requirement
- (4)—Responsibility requirement
- (5)—Mental requirement

These factors are illustrated in fig. 1 in a column block graph. The scale used in fig. 1 is not commonly used as an industrial evaluation scale. Note that column block heights in this graph are identical for each factor. Factor 2, physical requirement, is at the level of factor 3, skill requirement. Similarly factors 1, 4 and 5 are represented at the same top levels. Examination of the actual difficulty values of the different factors brings out that, for instance, the factor of physical requirement does not rank as high in difficulty as the factor of skill requirement (physical effort is exerted at will by any normal worker while skill is used only after months or years of application). There are equally real differences among the factors of working requirement, responsibility requirement and mental requirement. Accordingly fig. 1 represents a theoretical industrial situation. Contrast this with the values shown in fig. 2, which is the evaluation scale recommended by the National Metal Trades Assn.

Each block in the scale in fig. 2 represents a job situation. In a completely developed job evaluation program, the second block from the top, column 2, would, for example, be equivalent to a man standing in a stooped position using a 10 lb scoop to shovel steel chips at 30 lb to the shovelful from a steel floor to a box 3 ft high and 3 ft distant, at a dry bulb temperature of 70°F at a moderate pace (defined in a manual as 70 pct of the work period). Each of the other blocks in the five difficulty columns similarly represent job situations.

Whoever builds an evaluation scale must, in the column for physical requirement, set up a job situation that equals the man shoveling steel chips. Various procedures are followed in deciding where this chipman's physical requirement should be placed.

Fig. 3 is a column block graph of the evaluation



scales used by Westinghouse, General Electric and the National Electrical Manufacturers Assn. The three scales are built for the same industry (electrical) and it is reasonable to assume that the top blocks of each evaluation plan represent approximately the same factual situation. Even a cursory glance at fig. 3 will show that a chipman gets a much better break in an NEMA evaluated company than at General Electric or Westinghouse. If the work is concerned with mental skills and concentration, an advantage is found at Westinghouse. General Electric's scale provides the best comparative rating for manual skills.

These differences and more radical discrepancies among other companies raise questions concerning the validity of job evaluation in general. Each plan then must stand or fall on its own merits. The more important industrial plans in solution of the evaluation problem can be classified as follows:

(1)—The straight point method: No weight determination, as exemplified in fig. 1, and difficult to defend as an evaluation scale. The chipman receives

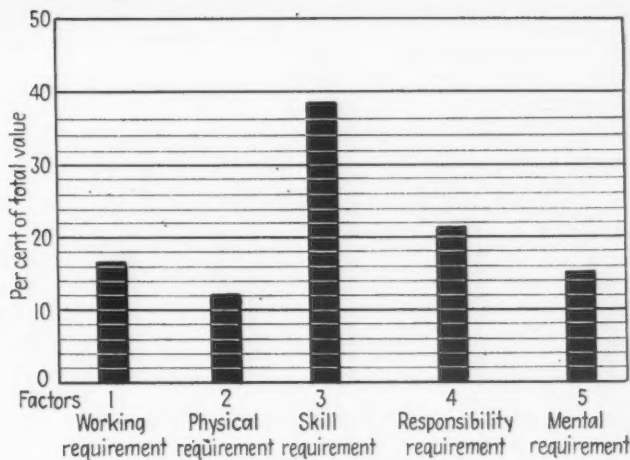


FIG. 2—Job evaluation scale recommended by NMTA.

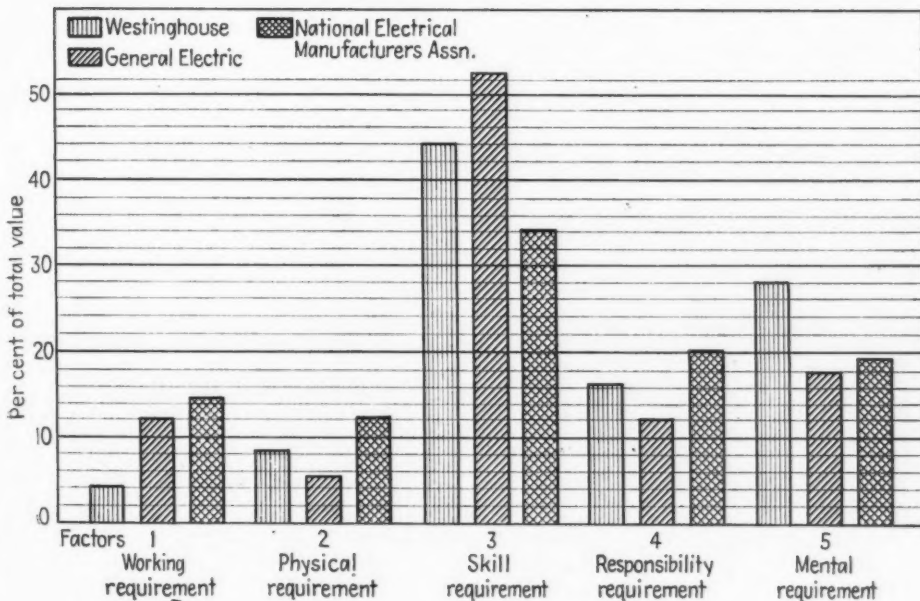


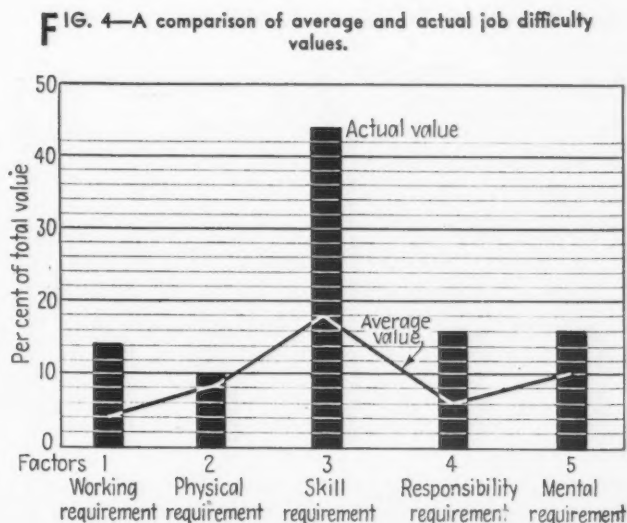
FIG. 3—Job evaluation scales used by several electrical companies.

the same weight for physical effort as the toolmaker receives for skill.

(2)—Weight determination using a range of key jobs in building the evaluation scale. Here the relation between toolmaker and chipman depends upon existing wage rates. If the toolmaker is paid \$2 per hr and the chipman 50¢, the ratio is 4:1. If the wage rate is \$1.50 and \$1 respectively, the ratio is 1½:1. Examples of this method are: Brewster Aeronautical Corp., Atlantic Refining Co., Pennsylvania Co.

(3)—Weight determination using the average factor value in an industry or company. The average value has little apparent relationship to the correct factor difficulty value. For instance, the skill and physical effort in a manufacturing industry may be largely transferred to automatic machines. The average skill and physical effort are consequently at a minimum. This gives rise to the question, is there any relationship between this average and the correct factor range? In answer, the improbability of any relationship between average and actual factor values is illustrated in fig. 4. Examples of the application of the average difficulty values are the NMTA and the NEMA plans as developed by Bass and Kress for the metal trades and electrical manufacturing industries.

(4) Weight determination from the group judgment of executives, personnel workers, job analysts (and perhaps labor representatives) based on a gen-



eral knowledge of the five job factors. Here weights are questionable, as they are likely to depend upon beliefs and prejudices rather than upon good judgment. Nevertheless many of the more successful evaluation scales are built upon general managerial judgment of difficulty values. Among these, taken from published reports, are Kimberly-Clark Corp., Wright Aeronautical Corp., General Electric Co., U. S. Steel Corp., and Westinghouse Electric Corp.

It is believed that examination of each of the foregoing types of evaluation programs can be of value in developing a sound job evaluation plan. Certainly an appreciation of the scale differences that are common

among similar companies and similar industries points out the importance of adequate factual support for the construction of an evaluation scale.

An acceptable system must protect the equity of adequate differential payment for skilled workers and at the same time properly place clerical and semi-skilled work. To achieve this, it is particularly important that both union management and industrial management work together with a full understanding of the problems that face the development of a sound and equitable job measurement scale.

## Automatic Broaching Speeds Auto Parts Output

**B**ROACHING the bore of automotive hypoid bevel drive gears at the rate of 225 per hr, with a stock removal of 0.020 in. represents an interesting application of continuous, automatic operation to the broaching process.

The machine, produced by Oilgear Co., Milwaukee, is shown in fig. 1, and in operation, the rough bored gear blanks move from a boring machine on a conveyor. As each blank reaches the broaching machine it contacts a limit switch which automatically starts the loading, broaching and unloading sequence. Dual hydraulic cylinders automatically move the blank off the conveyor into broaching position on the machine, and then return to the starting position as the upper tool handling cylinders lower the tool shank through the blank and into the automatic puller on the main broach slide. As the tool is pulled downward, it automatically centralizes the blank and then broaches the hole. The tool is secured on both ends during the major portion of the broaching stroke.

When the blank is broached, another hydraulic cylinder moves the finished part onto a second conveyor

and returns to position. The main slide and tool rise rapidly, the tool enters the upper holder and continues upward, the main slide stops automatically at a preset position while the upper carriage and tool continue upward to the starting point. As soon as another blank reaches the limit switch on the machine, it is fed into position and the cycle repeated.

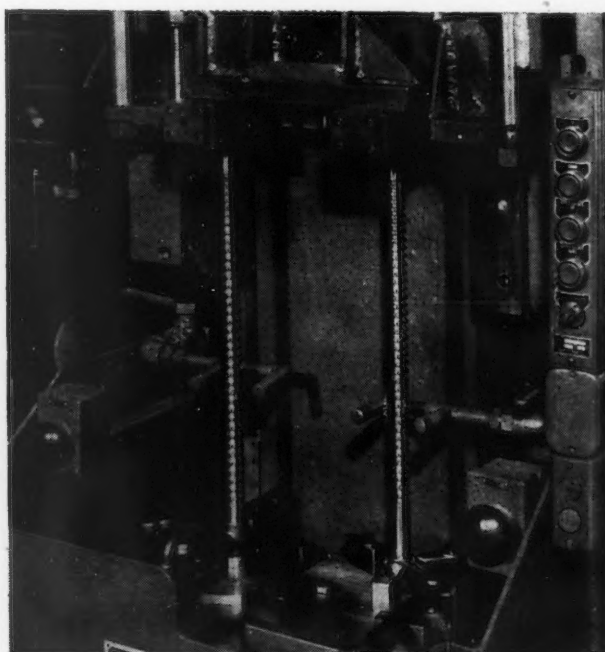
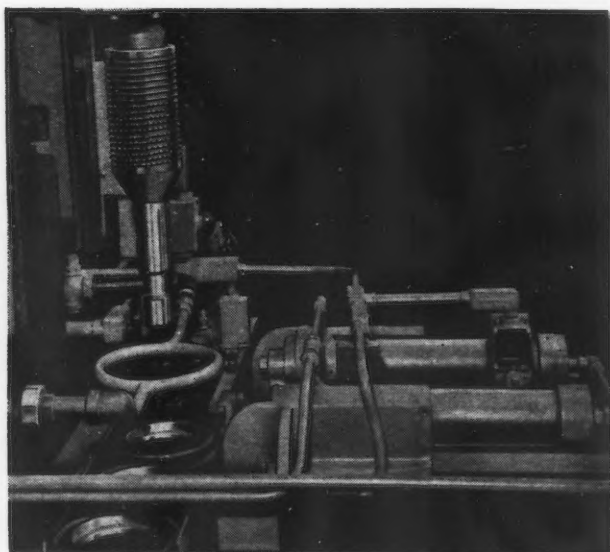
All chips fall away from the tool and cutting zone into a trough in the machine base. The machine is hydraulically operated, cutting speed is variable up to 30 fpm, and return stroke independently variable up to 80 fpm.

Similar machines have also been manufactured for finish broaching 33 internal involute splines in steel clutch driving plates in a single pass, and for broaching holes in clutch pedals and front drag link bell cranks. The tools are handled automatically by the machine, and all tool handling carriage and tool pulling slide movements are fully interlocked and synchronized. On the clutch plates approximately 0.530 in. of stock is removed, and production is at the rate of 120 plates per hr. The dual machine, fig. 2, will turn out 350 parts an hr, and removes 0.052 in. of stock from each of the 1-in. diam holes in the pedal and bell crank bosses.

FIG. 2—Dual broaching setup for clutch pedals and drag links. Parts are loaded and unloaded manually. (Right.)

o o o

FIG. 1—Setup for automatically broaching the bores of bevel drive gears. (Below.)



# German Wartime Technical Developments

**REPORTS** of German practice in numerous technical fields of interest to engineers and executives in the metalworking field, issued recently by the Office of the Publication Board, Washington, are briefly described below. These reports are in addition to detailed articles of certain phases of German practice previously published in *THE IRON AGE*.

Copies of the reports listed below may be obtained in either photostat or microfilm form, as indicated. Orders for copies of these reports should be addressed to Office of the Publication Board, Department of Commerce, Washington 25, giving the "PB" identification number. See *THE IRON AGE*, June 27, p. 67, for a list of earlier reports.

**Instrumentation**—German use of automatic controls for measuring temperature, pressure, humidity and other factors is about 10 to 15 yr behind current practice in the United States, according to this report. Fifty-three German plants using industrial instruments were visited by the investigators and are discussed in the report. *PB-4600; photostat, \$9; microfilm, \$1.50; 131 p.*

**Beryllium Production**—Beryllium production processes used by Deutsche Gold und Silber Scheide Anstalt at Frankfurt, Germany, are described in this report. The manufacturing process as described in the report was divided into two parts; production of pure anhydrous beryllium chloride from the mineral beryl, and electrolytic production of metallic beryllium. *PB-25668; photostat, \$1; microfilm, \$1; 12 p.*

**Synthetic Mica**—Synthetic mica developed in Germany may be better than natural mica for certain specialized telecommunication uses, according to this report, which describes synthetic mica research and pilot plant work at the Siemen-Schuckert plant and at the Kaiser Wilhelm Institute for Silicate Research. Other detailed reports on synthetic mica also are now available from OTS. *PB-32545 photostat, \$2; microfilm, \$1; 22 p.* Several other reports, some in German, covering synthetic mica are also available.

**Ceramic Molding**—A novel pressure-injection mold-

ing process developed by the Germans for making spark plugs and other ceramic products is described in this report on the German ceramic industry. The process is said to eliminate differential shrinking, reduces the amount of plastic material or fluxes required, and enables the production of articles with thinner walls and a high degree of toughness. The report also describes 10 German ceramic ware plants. *PB-28892; photostat, \$4; microfilm, \$2; 52 p.*

**"Manual of Arc Welded Design,"** by LaMotte Grover. Useful, up-to-date information covering fundamentals of design, materials, inspection, estimating and engineering control of welding and related operations. Specifications are included for welded connections for all sizes of rolled beams, and a series of diagrams for rapid design of welded connections is given. Air Reduction Sales Co., Dept. MD, 60 East 42nd St., New York 17, 281 p, \$2.

**Japanese Steel**—Japanese prewar steels were processed by methods similar to those used in the United States and England, but their low sulfur and phosphorus content indicated greater refinement, according to this report. Brief descriptions are given of Japanese basic electric furnace steel, the acid open hearth and the basic open hearth process. Tabular data on special steels designed to save nickel, molybdenum and tungsten are also contained in the report. *PB-31612; photostat, \$2; microfilm, \$1; 22p.*

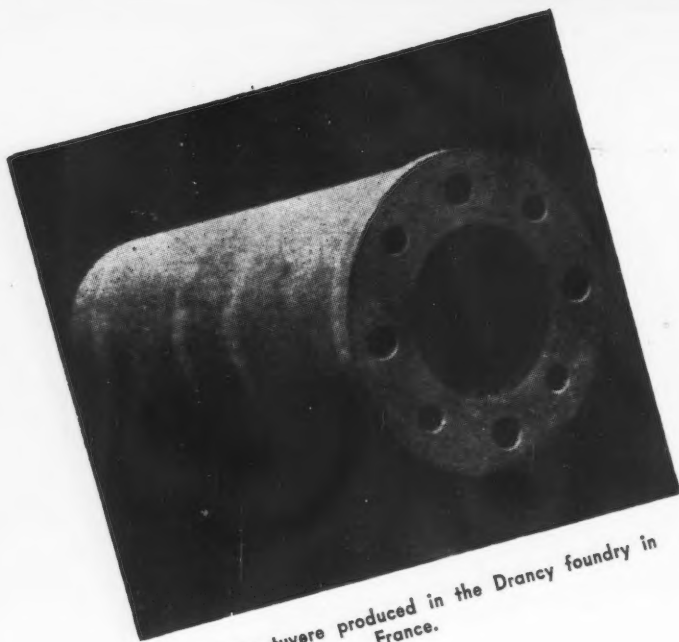
## Glycerine Use in Metal Coatings

**A** NEW use for glycerine is reported by W. W. Hamel (U. S. Patent 2,400,304), covering a method whereby materials ordinarily burned or damaged by heat may be coated with a continuous and air-impervious layer of metal which is sprayed on in the molten state. The process involves the use of glycerine solutions which act as protective liquids that vaporize during the actual spraying without leaving a residue, according to Glycerine Facts. Such a protective liquid may consist of a mixture of equal parts of glycerine and water, but the proportions may be varied, even to practically excluding water. The first step is to wet the material with the glycerine-containing protective liquid. The molten metal may then be

sprayed on by any standard process. Spraying must be done rapidly, in a matter of seconds, the time element depending on the temperature of the spray and other factors.

The method is applicable to paper, wood, plywood, leather, textiles, regenerated cellulose sheets, rubber and also to various plastics, glass and ceramics. Sprayable metals used in the molten state include aluminum, copper, gold, silver, zinc, tin, brass and even various stainless steels. With this glycerine-utilizing process, the metal coating adheres so firmly, it is claimed, that the articles can be subjected to mechanical stresses without danger of separating.





● Aluminum tuyere produced in the Drancy foundry in France.

# Aluminum Blast Furnace Tuyeres

**A review of the experimental studies conducted in Japan, Germany, England and France since 1920, on the use of aluminum tuyeres in blast furnace practice, is presented herein. Comparative data between copper and aluminum tuyeres, and the method of producing cast aluminum tuyeres are also discussed.**

AS far back as 1921, it was known that there was some advantage in replacing copper or bronze tuyeres by an aluminum alloy, which was much lighter in weight and therefore more easily and more quickly changed.

In Japan, in June 1923, aluminum tuyeres were first used in industrial operation. Results were so satisfactory that after three months the new tuyeres were in current use. In May 1926, Yoshihiko Hirakawa, chief engineer in charge of the Imperial Yawata steel mills and blast furnaces, conducted a comparative wear test of copper and aluminum tuyeres used under the same conditions. After 40 days, nine aluminum tuyeres had been damaged as against 29 copper ones. After trying out a two-piece tuyere requiring half of the usual amount of cooling water, but very expensive to manufacture, it was decided that ordinary type light alloy tuyeres would be used on six Yawata blast

*This article is an extended abstract of a discussion by R. Guillemot, which appeared originally in Revue De L'Aluminium, April 1946.*

furnaces. Since 1927 all tuyeres in these mills have been made of aluminum.

In Germany, the first aluminum tuyere patent was granted in 1921, covering a device made of various parts manufactured by press extrusion and rolling operations, the nozzle alone being molded. The Siegwiek Co., had the exclusive license and supplied tuyeres to the A. G. fur Huttenbetrieb Duisbourg Meiderich, which later on manufactured their own. This company later practically dropped the use of copper tuyeres as it had been recognized that the aluminum ones stood up very well and lasted longer. A few factories in the Ruhr and Silesia areas used another model patented by the Werdohl factory.

In Luxembourg, the Hadir Co., of Differdange, in 1927, tried out 99.25 pct Al tuyeres, with irregular results. Some tuyeres were damaged by projections of liquid cast iron. The overall average life was reduced to 87 days.

In England, industrial applications have been made

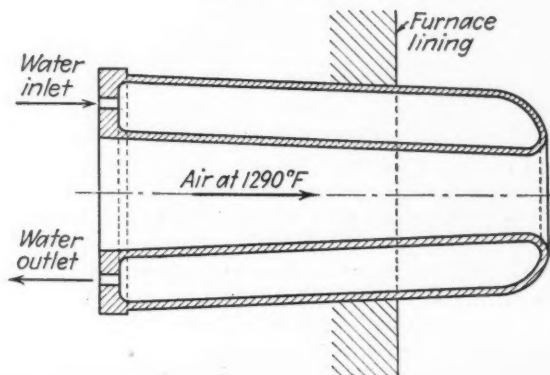
since 1927 by seven different companies with very encouraging results. During the war, the Corby blast furnaces operated with aluminum tuyeres.

## Tests in France

In France, it has been recognized since 1921 that aluminum tuyeres were better than copper on account of their light weight. For the same type, the weights are as follows; copper tuyeres, approximately 150 kg, and aluminum tuyeres, approximately 65 kg. Replacement time during which blast furnace operation must be stopped is as follows; copper tuyeres 20 to 30 min, and aluminum tuyeres 10 to 20 min.

Sporadic tests which ended with poor results created a state of cautiousness among metallurgists. Certain plants ascribed the poor results to the lower melting point of aluminum as compared with that of copper, without attempting to determine whether the cause of trouble could not be found in the irregular operation of the blast furnaces producing a stopping or a too rapid dropping of the load, or in casting defects in the tuyeres. In 1930, reduction in the cost of cop-

FIG. 1—Schematic sketch of operating characteristics of an aluminum tuyere.



per, together with a conservative and routine train of thought stopped all tendencies to change.

The great shortage of copper, which occurred during the war, revived interest in light alloy tuyeres. It is, therefore, only in the past 3 or 4 yr that French steel makers really began to use aluminum tuyeres in blast furnaces. At the Forges et Acieries de Pompey, after systematically testing six tuyeres which lasted from three and a half to six months, it was noted that aluminum tuyeres were quite comparable to copper and that their light weight involved a 25 pct saving in handling time in course of replacement.

The following are characteristic operation figures:

Air temperature at tuyere intake .....	700°C (1292°F)
Cooling water pressure..	1 kg (2.2 lb)
Temperature of water at inlet (July 1943)	20°C (68°F)
Temperature of water at outlet .....	29° to 30°C (84° to 86°F)
Temperature of water at outlet of copper tuyeres under the same conditions .....	27° to 28°C (81° to 82°F)

At the Forges et Acieries du Nord et de l'Est (division of Louvroil) copper tuyeres have been replaced by light alloy units since 1943. Cooling was obtained by use of nonpurified Sambre River water. Every time a blast furnace was stopped on account of clogging or for maintenance purposes, the tuyeres were cleaned. It was noticed that deposits appeared to be lighter than those in copper tuyeres. It is only after 5 months and 10 days of operation that a light-alloy tuyere developed a leak near the nozzle. Tuyeres always gave good performance in spite of unforeseen stoppages on account of water shortages following sabotage of pumps or of water mains (this was in January 1944). Overall results were considered to be very satisfactory.

For the past 2 yr, the Société des Forges et Acieries of Denain-Anzin has used light alloy tuyeres cast in its own foundry.

Dimensions of tuyeres used at Denain-Anzin are; base diameter—450 mm (17.717 in.), nozzle diameter—350 mm (13.8 in.), height—400 mm (15.748 in.). Air is blown through at between 1022° and 1157°F with a 57 cm (22.4 in.) Hg height pressure and a 220 m per sec (67 fps) velocity. Cooling water enters at a temperature of 53.6°F and comes out at 64.4°F.

Tuyere life varies, the average being 4 months and the longest, 154 days. The accidental, very short life of 3 or 4 days can apparently be ascribed to irregular blast furnace operation, since such abnormally short tuyere life is also encountered with bronze parts.

Tuyere breakdowns, in this plant, are not entirely accountable to wear of the nozzle (cracks with oxidizing corrosion). It has been noticed that half of the defective tuyeres show leaks at their lower part, that is to say, outside the furnace. An alteration of shape would probably eliminate such difficulties and bring about an improvement in overall efficiency.

Light alloy tuyeres do not noticeably differ from copper as regards shape and size. Alterations of inside design, including fins, ribs or reinforcements providing quicker elimination of heat, have been designed. But such complications appear useless as the smooth tuyeres give excellent results.

As in the case of copper tuyeres, a choice had to be made between sheet construction or castings. The latter with lower costs were selected. In France, at

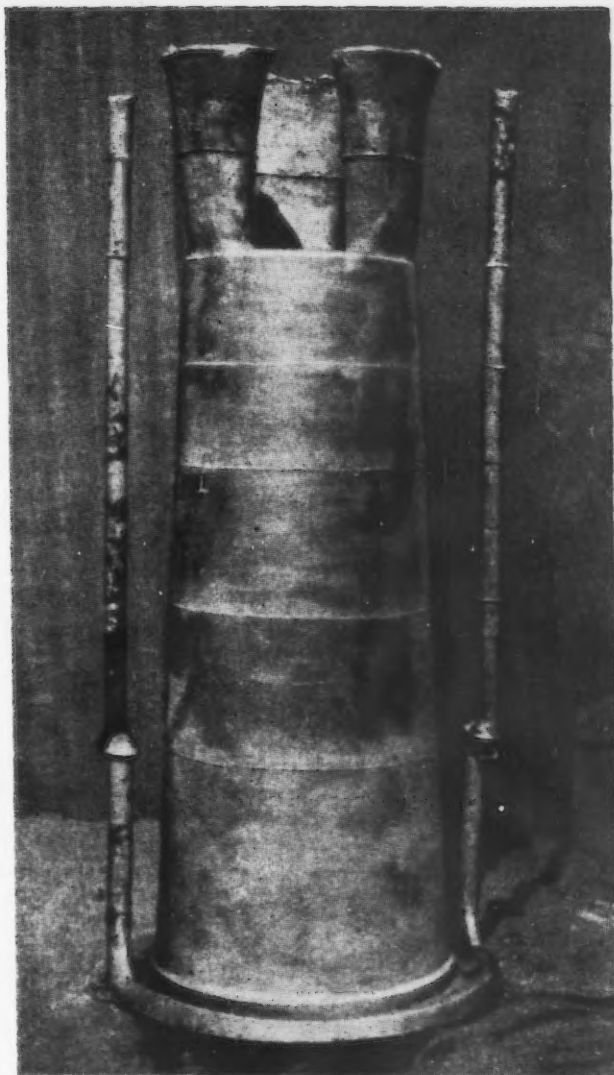


FIG. 2—An aluminum alloy tuyere made by the Frot and Lequoy foundries at Drancy, showing arrangement of gates and heads.

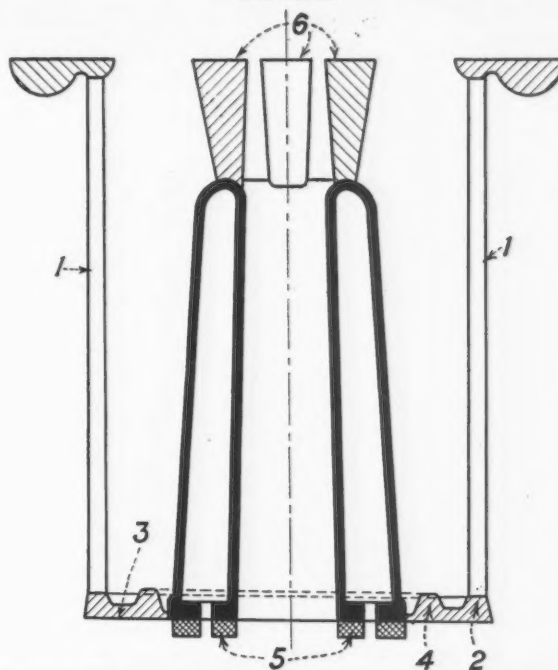


FIG. 3—Schematic sketch illustrating method of pouring a tuyere.



the present time, tuyeres are molded in green or dried sand molds with a dry sand core. Metal molds have been used in Japan, with the main mold and core of cast iron, and the water jacket core of dried sand. Metal die casting has the advantage of being cheaper and providing a close-grained alloy.

As for all light alloy parts, permeable, slightly humidified sand must be used. A typical sand is the Fontenay-aux-Roses grade, worked through a roll crusher and with a 4 to 6 pct water content. After the mold is completed, it is desirable to dry the surface with a flame. Although this is more costly, some foundrymen prefer kiln-drying the finished mold.

An Al-Si alloy, with a 4 to 5 pct Si content, is recommended for these parts. Preparation of this alloy may be avoided by purchasing one with the following analysis: 4 pct  $\pm$  0.5 Si, 0.7  $\pm$  0.15 Mn, 0.6  $\pm$  0.15 Mg.

In order to avoid gas inclusions in the melted metal, direct contact of flame with metal must be avoided (furnace sides completely closed or cover on crucible). If coke is used, it must be reasonably dry; if oil is used, air intake must be adjusted so as to obtain an oxidizing flame. In all cases, a temperature of 1328° to 1346°F for the melted metal should not be exceeded.

The pouring temperature for large tuyeres is approximately 1292°F, and for small tuyeres, approximately 1256°F.

Fig. 3 shows the correct method of pouring metal when casting tuyeres. Two ladles are used, poured into separate gates which must be kept constantly filled. Two cylindrical feed-heads (1) carry metal to the ring gate (2) which, through radial feeders (3) fills a feed-

head ring (4), which acts as a sump for impurities. Coolers (5) are placed under center part. Nozzle defects are avoided by use of four heavy feed-heads (6).

#### Influence of Air Velocity

Tuyere life is not independent of air supply velocity. In the course of the 1932 International Aluminum competition, Yoshihiko Hirakawa showed that tuyere damage was due to slag-cake formation. He noticed that whereas incandescent coke does not move when the air velocity is low, high velocity, on the other hand, produces a turbulent air movement. Ore coming through this zone is partially reduced, sticks to the coke and forms a compact mass in the neighborhood of the tuyere nozzle. This mass, instead of moving downward, combines with pig iron and forms a slag-cake which may clog the tuyere and cause local overheating. Such slag-cake formation can therefore be avoided if air velocity pressure is reduced by increasing the size of air ducts in each tuyere, or by increasing the number of tuyeres. In July 1928, M. Hirakawa verified this by operating two blast furnaces with 170 m per sec (52 fps) and 140 m per sec (43 fps) air supply velocity. Twenty-one tuyeres were damaged in the first case and only two in the second. By lowering velocity to between 105 and 110 m per sec (32 and 35 fps), in both cases, no accidents occurred.

Aluminum tuyeres would be used more extensively if it were not for the great variety of dimensions which are different for each blast furnace in a same factory. Such multiplication of foundry models uselessly increases the cost.

## Examination of Electro-Cleaned Steel by Electron Diffraction

**E**LECTRON diffraction examination of electro-cleaned steel surfaces may reveal not only what material is present on the surface, but also how it is present, according to a report presented by C. W. Smith, Detrex Corp., Detroit, and I. L. Karle, University of Michigan, at the annual meeting of the American Electroplaters' Society. The authors pointed out that electro cleaning is commonly believed to produce a chemically clean surface upon which a satisfactory electro deposit can be obtained. When the original contamination elements are removed and the resulting adhesion of an electroplate is satisfactory, the surface is termed clean. Electron diffraction examination shows that actually this surface is filmed with some compound of the base metal, usually an oxide or some combination of elements present in the cleaning solution. Truly clean metal does not exist long in its pure state. The unsatisfied interatomic or intermolecular forces at the surface attract whatever material is at hand, selecting those materials whose forces of attraction are the greatest.

The purpose of the investigation was to determine the chemical composition of steel surfaces cleaned under controlled conditions in which time, temperature and current density were constant. The solution composition and electrodes were made variable. A particular point of interest was to determine whether compounds of iron are formed by combination with common cleaning materials such as caustic soda, sodium metasilicate and trisodium phosphate. In case such compounds were found to be present, it was desired also to determine if they were removed by a succeeding acid dip prior to the plating cycle. The

best method by which materials present on the surface can be studied and identified is by use of an electron beam which is deflected from the surface film and the diffraction pattern produced by the electrons photographed and then identified.

The conclusions stated by the author were that so called clean steel surfaces cleaned electrolytically never exist as free metal since iron combines readily to form oxides or attracts other elements or compounds depending upon the intermolecular forces involved. There is an apparent basis for various formulations used in alkaline cleaning combinations since different alkaline materials produce different electrode films on steel under specified conditions.

Formation or deposition of a film on steel as the result of electrolytic cleaning with various alkalies would hardly be expected to have any influence on the adhesion or characteristics of an electro deposit if, in turn, it was removed by a subsequent acid rinse.

Electron diffraction examination may not only reveal what material is present on the surface of metals, but also how it is present. From this it is possible to gain information on the behavior of various materials in solution under specified conditions.

Electron beam penetration is very slight and only the surface film will diffract the electrons. In this, the authors pointed out, lies the fundamental advantage of the electron diffraction method for examination of thin films on metals. X-ray penetration is much greater so subsurface structures cause diffraction also. A complete study of surface structures might include use of both electron and X-ray diffraction methods.





**F**REEMAN H. DYKE, assistant general manager, Wheeling Steel Corp., Steubenville, Ohio, president of AISE.

# Steel Mill Engineers Examine Operating Problems

*AISE Convention brings record number of harried steel plant engineers and executives to Cleveland . . . L. R. Milburn to head association for 1947 . . . Technical sessions sift wide variety of postwar operating headaches . . . Republic Steel executive warns union leaders that labor contracts must be respected*

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MORE than 10,000 harried steel mill executives, engineers and supervisors found a measure of solace in Cleveland during the past week at the annual Convention and Exposition of the Association of Iron & Steel Engineers. Facing new and ever climbing production demands superimposed on equipment shortages and declining labor productivity, these visitors to Cleveland found in the convention's technical sessions and equipment exhibition answers to many of their most perplexing problems.

The convention, the first since 1941, ran from Oct. 1 to 4 and was reported to have drawn the heaviest attendance ever recorded for this type of meeting. Freeman H. Dyke, president of the association and assistant general manager, Steubenville Works, Wheeling Steel Corp., opened the meeting on Tuesday with a warning on the magnitude of the problems facing production men, while at the same time acknowledging the accomplishments of this, the industry's first year of peacetime production.

The association announced on Thursday the election of Indiana-born L. R. Milburn to the presidency for 1947. Mr. Milburn, electrical engineer with Great Lakes Steel Corp., Ecorse, Mich., has been serving the society as first vice-president in 1946.

Prize winners for 1945 in the association's annual Kelly Award competition for outstanding technical papers published in the course of a year in the group's publication were announced to be as follows: First prize went to H. F. Lesso and R. W. McCann, Great Lakes Steel Corp., for a paper entitled, "Influence of the Charge Upon Openhearth Furnaces." This

paper discussed the character of materials charged into the furnace and effects of variations in the charge on openhearth performance.

Ross E. Beynon, superintendent, roll shop division, Carnegie-Illinois Steel Corp., won second place for a paper entitled "Structural Mill and Structural Mill Roll Design." This award was Mr. Beynon's third consecutive award in this competition. B. M. Larsen and C. Siddall, research laboratory, United States

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**L.** R. MILBURN, electrical engineer, Great Lakes Steel Corp., Detroit, who will assume the presidency of AISE in 1947.

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AISE oldtimers at the convention included (left) James Farrington, Wheeling Steel Corp., Steubenville, Ohio, the association's first president; (right) John Reed, Bethlehem Steel Co., Steelton, Pa., the association's second president, and (center) John L. Young, National Tube Co., Pittsburgh.

Photos by Bud Scott

Steel Corp., were awarded third prize for the paper "Theoretical Limiting Efficiency of Various Fuels in the Openhearth."

Union leaders were charged by E. M. Richards, operating vice-president, Republic Steel Corp., to see that their men recognize the sanctity of contracts and to educate them to the fact that business prosperity is as important to them as it is to management.

Industrial strife has continued, Mr. Richards said in his address at the association's annual banquet, despite the existence of written contracts between labor and management which were expected in prewar years to permit the settlement of all industrial disputes on an orderly basis. There were strikes in 1936 and 1937 and throughout the war in the face of a "no strike" pledge to government by ranking labor leaders, Richards said.

In contrast, business respects a contract as sacred. Management follows the contract because management has given its word. But to labor it seems that the temporary gain bought by strike is of greater importance than the contract.

Mr. Richards then referred to developments of recent months. "We were recovering from a disastrous war," he said. "The need for steel was greater than at any other peacetime period. In the face of a written pledge from the union not to strike during the life of their contract, a strike was called in January even though the life of the contract was until October. Management was amazed at the union position that the strike pledge did not apply when the question under discussion concerned wages, in spite of the fact that more strikes arise over wage disputes than over all other subjects combined.

"To be fair," Mr. Richards said, "since that strike there have been indications that some union leaders are attempting to observe the sanctity of their contracts. Unfortunately, however, too many local presidents and union members are not following their example. These members and officers defy the constitution of their union in violating their agreements without any disciplinary action being taken by the union's national officers.

"If labor fails to meet its promises," asked Mr. Richards, "why should the employer enter into a contract? Until local officers and their followers change

their attitude and treat a contract as a legal and sacred instrument, temporary gains which may be bought at the expense of breaking the contract will be offset when the public comes to the conclusion that the word of the union is worthless."

In discussing the economics of new wage demands and their subsequent effect on inflation, Mr. Richards recalled that no sooner had the war come to an end than the government abolished the ceiling on wages and said that wages could be increased substantially without necessitating an increase in prices. The strikes that followed resulted in wage increases many of which conform to the pattern set by the government. Industry, to save itself, was forced to reply with price increases wherever permitted. Even so, some companies tottered on the brink of insolvency; others were forced out of business. Price controls prevented many industries from raising prices, so goods were forced off the market and the black market became a national scandal.

Space limitations preclude an extended description of the equipment exhibit, other than to record the very obvious interest shown in many of the peacetime adaptations of wartime developments on display. Equipment and ideas which would permit a reduction in labor requirements were accorded particular attention. The daily technical sessions covered a wide range of current problems. Extended abstracts of a number of these papers are presented with this report. Complete copies of the papers may be obtained through the Association of Iron & Steel Engineers, Pittsburgh.

### New Method of Coil Annealing

A PRACTICAL method of transferring heat to and from coiled sheets steel by presenting the coil edges to the heat source was described by H. H. Armstrong, vice-president in charge of engineering and F. F. Schlitt, combustion engineer, Lee Wilson Engineering Co., Cleveland. The development is based on equipment engineered by the company, and several installations are in use.

With the wartime trend toward the use of heavier coils, a method of annealing that would increase heat transfer and reduce heating time has been

**NOTABLES** at the AISE banquet included (left to right) A. J. Fisher, fuel engineer, Bethlehem Steel Co., Sparrows Point, Md., author of a technical paper, V. F. Lesso, a co-winner of the first prize in the latest Kelly award competition, and W. H. Burr, Lukens Steel Co., Coatesville, Pa., a past president of AISE.



desirable. In using the larger coils, the calculated annealing time was set at 140 hr. and under such conditions the tons per hour yield in charges of this size were going to be decreased rather than increased, thus eliminating the total advantages obtained in processing larger coils.

The furnace engineered to do this job combines the advantages of radiation, convection and conduction of heat. Its construction is identical with the standard type of bell furnaces with the exception that the piling height has been increased. The unit is heated by radiant tubes, an inner cover is used over each coil stack, and a recirculating fan operates under each stack of coils. The coils are placed on the base platform, but below the bottom coil and between each of the coils above there is placed a vaned spacer or compensating convector that provides a path for recirculating gases.

The fan drives the gases between the inner cover and inner liner to the top of the unit where they then pass through the coil spacers to the center of the coils. The top hole in the stack of coils is covered with a plate to force the gases down around the outside faces of the coil, through the compensating convectors and then to the fan for recirculation. The path that the gases take is through a pair of heat exchangers in which heat is added to the recirculated gas or extracted, the function each exchanger provides depending upon whether the charge is being heated or cooled.

Radiant tubes, which are the heat source, are increased in diameter and burner changes have been made so that each tube is capable of an input of 350,000 Btu per hr. The type of burner, a dual pressure design, permits an adjustment of primary and secondary air so that the length of flame in the radiant tube can be adjusted to be equal to somewhat less than the total tube length so that heat transfer is accomplished over a large area and the Btu transfer per sq in. is held within safe limits.

This system of heat transfer, according to the authors, not only shortens the heating time but also the cooling time. The critical portion of the design of this heat application is the compensating convector. It provides means of imparting heat to coil edges at such rates as will insure acceptable tem-

perature fields in the coils. To do this it must compensate for the radiant heat supplied the outer wrap and must compensate for the temperature change in the recirculated gas. The compensations are effected by the vane shapes, which reduce the area of passage and increase the mass velocity of the gas as it flows toward the coil core and at the same time increases the convection transfer surface.

A charge of coils 34-in. diam weighing 8 tons per stack was heated to a specified temperature spread of 35°F between edge and center in 8 hr, a heating rate of 1 ton per hr per stack. Physicals compared favorably with those obtained in normal type charges that had had from 20 to 24 hr furnace time. This charge was cooled in 7 hr.

A charge of 58-in. coils piled 109-in. high for a stack weight of 32.5 tons was heated so that no part of the stack was less than 1300°F and the bottom edge did not exceed 1350°F. It was done in 22.5 hr for a net yield of 1.47 tons per stack per furnace hr.

A stack of 4 coils for tinplate, 58-in. in diam. and weighing 41.25 tons was heated. After 27 hr furnace time, a uniform spread of about 40° was established throughout the center temperatures of all coils in the stack. This yield was slightly over 1.5 tons per stack per furnace hr.

Because of the small temperature spread that is maintained throughout each stack over the heating cycle, the authors suggest the possibility of eliminating the so-called soaking period because when a practical operating thermocouple reaches temperature, all parts of the coil are within an allowable range. They also suggest the possibility of increasing the general temperature of the anneal without danger of grain growth due to prolonged heating above the lower critical.

### Mill Type Motor Standards

**A** NEW line of mill motors, using the AISE standard frame sizes, but increasing the horsepower in each frame to the rating of the next larger frame is being studied by General Electric Co. In a paper by Frank W. Cramer, chairman of the AISE standards committee, the preliminary progress made in this endeavor was summarized. GE submitted a proposal





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**E. M. RICHARDS,**  
 vice - president  
 in charge of opera-  
 tions, Republic Steel  
 Corp., principal  
 speaker at AISE an-  
 nual banquet.  
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to the committee that embraced five basic changes in mill motors. These improvements are: (1) Assignment to the present AISE frame sizes and dimensions, for both the basic and the back geared motors, of the existing horsepower and speed ratings for the next larger AISE frame size; (2) establish in a frame smaller than the present AISE frame No. 2, one new frame to accommodate the new 5 hp rating; (3) alter the present standardized bearing sizes to permit shaft diameters suitable for the new proposed higher ratings; (4) add to the present list of standard motors one having the 200-hp, 1-hr enclosed rating in the AISE frame No. 18, and (5) standardization of the 20° stub tooth form of gearing.

In this proposed line of motors, the speeds would be changed from the existing speed for the rated horse-power in the present frame size to the rated speeds of the next larger frame size.

To determine the acceptability of the proposed changes, questionnaires were sent to 31 steel mill engineers and manufacturers using these motors in steel mill applications. The bulk of the answers indicated that the principal physical dimensions of mill motors should be retained. About half of those questioned requested additional motor sizes, mainly for specific applications. As to the ratings of these motors, 20 of 29 replies indicate that only three of the five ratings are required. Several other questions were asked, all with the view to present the problem of the proposed changes to mill motor standards and to obtain the opinions of a cross-section of industry engineers.

### Oxygen for Industrial Uses

**I**NCREASED demand for oxygen for industrial use has resulted in several projected expansions in capacity including what will be, when completed, the largest oxygen producing plant in the country, which will turn out 40 million cu ft of 90 to 95 pct purity oxygen, according to a report made by Martin J. Conway, steel industry consultant, Stacey-Dresser Engineering Co., Cleveland. Mr. Conway stated in his paper entitled "Manufacture of Oxygen in Large Quantities for Industrial Uses," that this plant, now

under construction, will operate in connection with the Hydrocol process for the production of motor fuel, synthetic diesel oil and crude alcohols by processing 64 million cu ft of natural gas a day. This plant will produce gas at an estimated cost of 4.8¢ per 1000 cu ft, Mr. Conway stated. This cost is based on an investment of \$3,500,000 for the plant and includes amortization, maintenance and operating labor. Power, amounting to less than 14 kw per 1000 cu ft of oxygen, and water costs are excluded from the cost figure as both are available as byproducts of the process and are automatically covered in the price paid for the natural gas.

The author touched upon some of the growing interest in oxygen enrichment of blast furnace air, pointing out that the first large scale tests were made in Belgium in 1913 with a reported increase in pig iron production of 12 pct and a 3 pct reduction in coke consumption. The blast in these tests was enriched up to 23 pct oxygen. Twenty years later an experimental furnace in Germany showed, with enrichment to 26 pct, a coke saving of 14 pct and an increase in output of 12 pct.

The Russians in 1936, after 4 yr of tests, were said by the author to have recorded the following possibilities for further investigation.

(1) Hot blast enriched by oxygen, proposed for the Makejevka furnace, using existing furnace plant and stoves. Oxygen concentration usually below 30 to 32 pct.

(2) Cold blast with more than 30 to 32 pct oxygen. Additional heat in the shaft to be provided by blowing heated gases into the shaft. Intensive hearth cooling would be required and injection of water vapor into the hearth suggested.

(3) Enrichment to 55 to 60 pct oxygen to give blast furnace gas suitable for ammonia production. Hearth temperature would have to be reduced.

(4) Radical decrease in coke consumption, cold blast and hot reducing gas to be introduced into the shaft.

(5) Direct steel process. Coke to be charged peripherally to reduce carburization.

### Measuring Heating Rate of Steel Slabs

**M**ETHODS and equipment used to permit accurate measurement of surface and center temperatures of slabs without disturbing the regular operation of the reheating furnace were described in a paper entitled "Measurement of Rate of Heating of Steel Slabs in Reheating Furnaces," by J. W. Percy, research laboratory, U. S. Steel Corp., Kearny, N. J.

The measurements were made on a series of standard slabs which ranged in thickness from 4 to more than 7 in. The slabs were prepared by drilling a 1-in. hole along the major axis to the geometric center, with a depth ranging from 30 to 50 in. The test slab is charged in the usual fashion, with the end with the hole for the thermocouple and its protective tube being near the side wall of the furnace. The furnaces involved in this study were typical top and bottom fired, 3-zone types. A number of side doors, approximately equi-distant along the furnace made it possible to measure the temperature of the test slab as it passed each door in order to get sufficient

data for establishing a satisfactory curve of slab temperature, both at the center and surface for distance along the hearth or time in the furnace.

In making the test, the push in the charge is adjusted so that the test slab is in front of each side door long enough to permit temperature measurements to be made. These readings require not more than 2 min. The temperature at the center of the slab is measured by means of a platinum : platinum-rhodium thermocouple, about 10-ft long, enclosed in a protective tube of stainless steel from which it is insulated by ceramic beads. The tip of the thermocouple is covered by a silica tube, closed at one end, which has been cemented into a piece of 1/2-in. stainless tubing, but partly cut away along the sides opposite the junction. This assembly is made fast to a long protective tube. By this patented design, the thermocouple is kept away from the deleterious action of the hot furnace gases and the silica tube insulator at its tip is protected from mechanical shock or damage, yet it permits rapid transfer of heat to the hot junction so that exposure of a half minute suffices to equalize the temperature and give consistent readings.

Rapid measurement of the surface temperature was possible by development of a special, patented type of surface pyrometer. This unit is used preferably in conjunction with a high speed recording potentiometer to lessen the chance of error. It requires an exposure of only 10 to 15 sec for a satisfactory reading.

Discussing a pair of typical curves resulting from a test run, the author pointed out that it showed a nearly constant temperature difference between surface and center until the slab was about two-thirds the way through the furnace and entering the soaking zone, when it passes through zero and reverses. This reversal is largely due to a considerable drop (150°F) in surface temperature while the slab re-

mains in that zone. This, Mr. Percy said, raises a question as to the desirability, or economy, of this final drop in temperature, or of a distribution of temperature in which a slab ready for rerolling is decidedly hotter at its center than at its surface.

A further series of curves discussed by the author illustrated the differences that may occur in ordinary practice from one slab to another, and also between surface and center of any one slab. In a 5-in. slab, this difference may be as much as 800°F after 80 min in the furnace, while on a 4 1/2-in. slab, the difference may be 300°F after 110 min. These time-temperature curves were shown transformed to similar curves for heat content (Btu) per pound of steel against time in the furnace. Discussing such typical curves, the author pointed out that the rate of heat input to the steel (in a given type of furnace) rises to a maximum well along the hearth, from which it drops to zero, or even a negative quantity, as the slab enters the soaking zone. Also, the maximum rate of input per pound of steel to the 7-in. slab is not quite half as great as to the 4 in. slab.

### Advances in Sodium Hydride Descaling Baths

A REVIEW of the present status of the sodium hydride process was presented by H. L. Alexander, manager, metal descaling, Electrochemical Dept., E. I. duPont de Nemours & Co., Inc., Niagara Falls. The author reported that there are 18 installations at present, distributed as follows: Six units for wire, three for sheet, three for job descaling, two for bars, two for castings, one for forgings, one for fabricated parts. Large tonnages were said to be processed in all but two of these units. These installations are used to descale the following types of material: NE steels, SAE steels, carbon steels, cast iron and cast steel, chrome stainless, chrome-nickel stainless, high-

CHAIRMEN and some of the speakers at an electrical session were (left to right) M. B. Antrim, Lukens Steel Co., Coatesville, Pa., E. L. Anderson, Bethlehem Steel Co., D. C. Nelson, Jones & Laughlin Steel Corp., and R. A. Geuder, Reliance Electric & Engineering Co.







**L.** R. MILBURN, who will serve as president of AISE in 1947, inspects an exhibit with B. Jones, Salem Engineering Co.

speed tool steel and silicon steel. These materials are being cleaned in various forms and stages, including rod, wire, bars, strip, cog stock, breakdown plates, plates, sheet composite sheet, castings, forgings, stampings, fabricated parts and welded and brazed parts. Additional sodium hydride descaling baths were said to be in course of installation to process metals and alloys in prime producing mills as well as galvanizing, heat treating, welding and fabricating plants.

Among the newer commercial applications of the process listed by Mr. Alexander was the final desanding and descaling of intricate castings such as

See THE IRON AGE, May 16, 1946, p. 51.

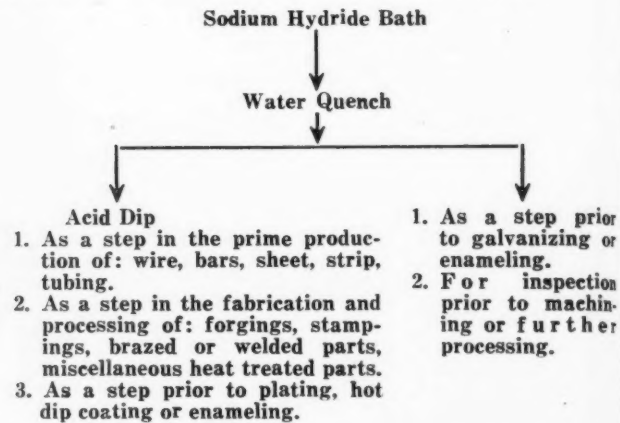
pump heads and other similar castings which must be thoroughly cleaned before final assembly. The hydride treatment is used following normal sand or shot blasting operations as a means of removing final traces of imbedded sand and scale particles. However, the treatment cannot be used as a means of primary sand removal.

Another recent development described was in connection with a heat treating operation. The plant involved uses a proprietary paint as a stop-off for selective carburizing of steel parts. The resultant scale formed on these parts after heat treatment is difficult to remove by normal methods, as it contains considerable amounts of finely divided silicious and copper material. A treatment of approximately 10 min in an hydride bath, followed by a water quench produced a clean part, suitable for further machining.

The author also said that considerable interest exists in the possibilities of hydride descaling prior to plating operations. In many cases this will permit either complete elimination of acid or at least to confine its use to a short final dip. The use of the bath for descaling prior to hot dip galvanizing was said to be very effective. Objects ranging in size from nuts and bolts to structural members are being considered for treatment in installations now in progress.

In this use, the hydride treatment is followed by a water quench and then a dip in a suitable flux.

Summarizing the applications of the sodium hydride process, the following breakdown was given:



### Welding in Plant Maintenance

**A**UTOMATIC Welding in Steel Plant Maintenance," a paper by H. E. Holman, Jones & Laughlin Steel Corp., Pittsburgh, describes some of the problems encountered in plant maintenance and the part played by automatic welding equipment in the solution of these problems. The paper confines itself to the reclamation and salvage of worn parts, applications and results, and the advantages of this type of welding as a maintenance tool and not in fabrication.

Original efforts by the author in the use of such welding equipment as a maintenance tool was in reclaiming crane wheels with worn treads and flanges. It was found that a 0.15 pct C, 1.75 pct Mn wire had excellent machining qualities but was too soft for general crane wheel usage. After a series of experiments a wire of 1.00 pct C, 0.50 pct Mn, and 0.15 pct Si, which resulted in a deposited analysis of 0.42 pct C, 1.50 pct Mn, and 0.45 pct Si and a Brinell hardness averaging 240, was selected.

This same analysis is desirable when a shaft can be salvaged and then flame hardened. This practice was used to prolong the life of a wearing surface and minimize replacement costs. Other applications of the 0.60 to 0.70 pct C and the 1.00 pct C wires are on repairs to blooming mill table roll journals and bodies, housing roller shafts, flying shear drum journals, shear plungers, scrap press plungers, ladle car wheels, spindles, and the interpass for hard surfacing deposits on such applications as billet mill twister rolls.

In many cases the cost of welding is reduced and frequently absorbed by eliminating the cost of a fitter's time in removing and refitting the pin in the crane wheel, or the axles in pit covers and ladle car wheels. In all cases, the cost of welding labor, welding materials, and machining labor seldom equals 50 pct of the cost of the new piece of equipment.

A built-up strip mill coiler roll, replacing a cluster of chilled iron rolls was attempted. Using a wire of 0.33 pct C, 5.00 pct Cr, 1.40 pct W, and 0.95 pct Si a deposited analysis was achieved that was 0.23 pct C, 1.18 pct Mn, 4.08 pct Cr, 1.15 pct W, and 0.92 pct Si.

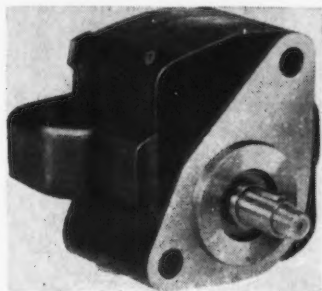


# New Equipment...

## Plant Service

**Recent developments in hydraulic pumps, air cylinders, pressure valves, cleaning devices, reproduction machines, and fire extinguishers are described in this week's review, which also includes other items of general plant utility such as lubricating units, fasteners, and computers.**

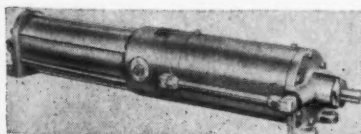
**S**UITABLE for hydraulic systems ranging from 100 to 2000 psi, such as farm tractor equipment actuation and control, hydraulic press-



es, machine tool feed controls, hydraulic jacks, etc., a gear-type hydraulic pump, model H657-A, has been announced by the *Aro Equipment Corp.*, Bryan, Ohio. The unit is rated at 5½ gpm at 2800 rpm. Simplified construction and high efficiency are claimed for the pump which employs Nitralloy gears in a cast iron body. The pump is approximately a 3½-in. cube with ½-in. diam x 11/16-in. drive shaft extension, plus threaded portion for ¾-in. nut.

### Air Cylinders

**F**AST-ACTING, economical operation by air is combined with smooth, uniform, controlled hydraulic-type regulation, it is said, in the double acting Air-Draulic



cylinders developed by the *Logansport Machine Co.*, Logansport, Ind. These air cylinders may be utilized wherever compressed air is available. They are made with separate air and hydraulic pistons assembled as an integral unit on a common

piston rod. Rod movements are powered by the air cylinder, which may be controlled by any type of 4-way air valve. Cylinders can be furnished for controlled feed with rapid return in either direction, controlled feed in both directions, and skip feed movements provided through cam valves in the hydraulic circuit. They are available in four standard sizes from 3 to 8-in. bore, with any length of stroke to 5 ft. The air piston is built for operation at pressures to 150 psi.

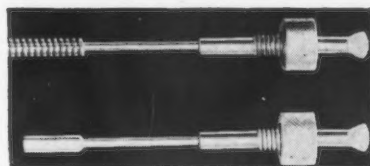
### Angular Contact Bearings

**S**AIID to be one of the most versatile little ball bearings produced is the angular contact bearing which has been announced by *Miniature Precision Bearings*, Keene, N. H. No separator is required since the balls are self-retained and no cap is necessary. The bearings may be used to take radial or thrust loads or a combination of both. They function safely and effectively under unusually heavy loads and high speeds for their weight and size, yet respond efficiently in light service, it is reported. The bearings are made of chrome alloy bearing steel to precision tolerances. Electric motors, scale mechanisms and accelerometers are among the applications of the bearings.

### Bearing Lubricators

**P**RESSURE filled lubricators, called Gun-Fil lubricators and manufactured by the *Gray Co.*, Inc., 60 11th Ave. N. E., Minneapolis 13, automatically dispense oil or grease in a measured, uniform flow to a moving bearing, and stop feeding lubricant when a bearing becomes motionless. They are designed in four sizes, with lubricant capacities ranging from ½ to 8 oz.

Six interchangeable valves are available with distinctive colored caps for identification. The valves



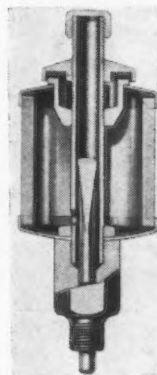
with colored caps exert varying degrees of control of feed on greases of different densities.

### Hose Couplings

**A**TTACHABLE - detachable reusable metal couplings which make it possible to hand-assemble flexible hose lines have been developed by *Resistoflex Corp.*, Belleville, N. J. Combined with any flexible hose, preferably with compar-lined gas-oil hose, these reusable couplings properly attached are claimed never to let go or vibrate loose. The coupling nut threads onto the hose, with coupling shell compressing the hose end into a safety-seal gasket.

### Bottle Oiler

**A**NNOUNCEMENT of a vibrating rod bottle oiler which is automatic in operation, has been made by *Oil-Rite Corp.*, 3489 South 13th St., Milwaukee 7. It is constructed of brass and has an unbreakable Lucite reservoir which can be refilled without removal from installation. The oiler has been designed for use on plain sleeve bearings, line shaft bearings, jack shafts, and spindles where light or medium



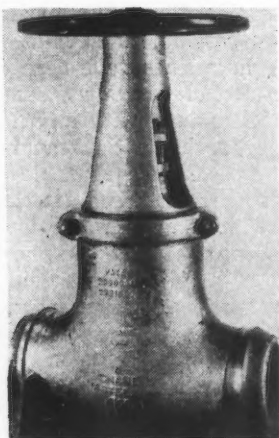
bodied oils are satisfactory. Standard capacities of 1/2, 1, 2, 4, 8, 16 and 32 oz, with 1/8, 1/4, 3/8 or 1/2-in. pipe thread are available.

#### Pipe Joint Compound

**P**ipe joint compound in handy, easy-to-use stick form has been announced by the *Lake Chemical Co.*, 607 N. Western Ave., Chicago 12, for lubricating and sealing pipe joint threads, nuts, bolts, gaskets, turnbuckles, etc. Only 3 or 4 strokes of stick across pipe threads are necessary. It spreads and fills threads when turned. Pipetite-Stik, as it is called, withstands gasoline, oil, air, water, steam, acid, etc., and joints can be disconnected months and years after applying, it is reported. Encased in a cardboard holder, the stick may be carried in a pocket or tool kit, ready for instant use.

#### Pressure-Seal Valves

**D**ESIGNED for high pressure, high temperature steam service, primarily in the 1500 and 900-lb pressure classes, a line of valves with welding ends has been an-

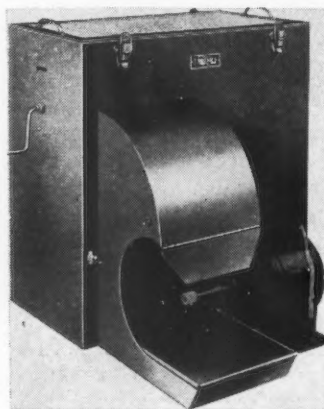


nounced by the *Crane Co.*, 836 S. Michigan Ave., Chicago 5, embracing gate, globe and angle, and automatic stop-check valves. The design incorporates such changes from previous construction, as a pressure-seal bonnet joint which utilizes the pressure in the valve to seal the joint and to eliminate leakage. Inspection of the interior of valves is expedited by the ease with which the pressure-seal joint can be taken apart and re-assembled. This new design of valves permits a reduction in weight as well as an appreciable saving in space. Other improvements are found in the need for

less insulating material, and in a design of disk for gate valves which has built-in flexibility.

#### Dust Collector

**M**ODEL 421 Dustkop, a portable, self-contained dust collector designed by the *Aget-Detroit Co.*, 602 First National Bldg., Ann Arbor, Mich., requires no installation other than placing the unit in



position on the bench and plugging into the lighting circuit. In addition to its motor-driven fan, cyclone separator and filter, this model incorporates a grinding wheel hood which is built as an integral part of the unit. Used primarily for bench-type dry grinding, the dust collector may be used for buffing, polishing, and work which produces long stringy material, lint, bristles, etc., as it is equipped with a self-clearing paddle wheel fan. Two stages of air cleaning are incorporated in the collector; the first, claimed to remove all heavier dust and dirt, the second, to remove the finer particles.

#### Tube Expanders

**M**ODEL 16 tube expander, manufactured by *Richard Dudgeon, Inc.*, 24 Columbia St., New York 2, serves for general boiler work, railroad maintenance, boiler making and boiler repair. It has been designed with a minimum of parts—frame, rolls and mandrel. The expander may be dismantled and new rolls quickly inserted. The frame holding the rolls is one piece, heat-treated steel, and mandrel and rolls are hardened tool steel. The rolls, extra long and reversible for double length of service, are set at an angle with the mandrel for self-feed. Model 16 expanders bear on the end of the tubes, do not draw tubes out of the tube sheet, and

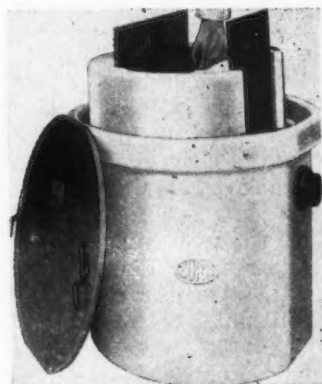
roll the tube ends for their full length. They are furnished for hand or combination hand and power use.

#### Steam Cleaning Unit

**W**EIGHING only 28 lb, a steam cleaning unit which utilizes available steam supply, has been put on the market by *Turco Products, Inc.*, 6135 South Central Ave., Los Angeles 1. Any steam line maintaining 80 to 150-lb pressure with a 3/4-in. valve outlet may be used for connecting up the unit. Three manual controls vary the temperature, quantity of solution and nozzle pressure. It can be adjusted to deliver a high-temperature, penetrating spray or a moderately warm spray. From delicate aluminum surfaces to heavy construction equipment caked with grease and dirt can be cleaned with the unit. It is said to be safe, easy to operate and practically fool-proof.

#### Solids Interceptor

**P**ARTICLES of plaster, plastics, metal, glass and other solids which clog drains in industrial plants can be intercepted with the solids interceptor manufactured by



the *J. A. Zurn Mfg. Co.*, Erie, Pa. The function is accomplished by two perforated metal strainers which intercept the solids in the waste water as it passes through the interceptor body. In addition the metal strainers serve as baffles to quiet the turbulence of the water, permitting the solids to drop more readily to the bottom of the container. This unit has a non-porous, vitreous body which makes it highly sanitary.

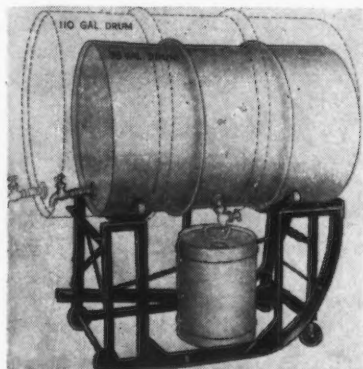
#### Drum Cradle Truck

**F**OR handling 55 and 110-gal drums, a drum cradle truck has been constructed by the *Morse Mfg. Co., Inc.*, 122 Dickerson St., Syra-



## NEW EQUIPMENT

cuse 2. The device consists of a retracting caster frame that swings inside rockers when the drum is being rocked up and is then thrown



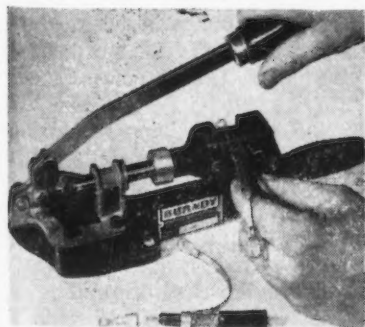
forward by pressure on the foot lever, placing casters well forward to provide a long, wide wheel base. On the side rails are mounted four rollers for rotating the drum. One side rail is cut away so that a 5-gal can may be set under the drum.

### Safety Siphon

**A**CIDS may be handled safely, it is claimed, by the use of the safety siphon designed by *Alden Speare's Sons Co.*, 156 Sixth St., Cambridge, Mass. The device is made of an inert plastic, said to be unaffected by practically all grades of commercial acid. It is used to draw acid from carboys of from 5 to 13 gal and from the side bung of 50 to 55-gal drums. The siphon is primed by a built-in pump; thereafter no further action is required. Discharge of the contents of the carboy can be adjusted from a trickle to a fast steady flow, by a flow control valve.

### Connector Tool

**F**OR installing coaxial and shielded cable connectors as well as standard types of Hydent electrical

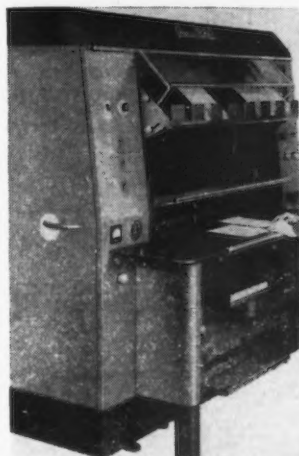


connectors, a portable, manually-operated Hytool has been manufactured by the *Burndy Engineering*

*Co., Inc.*, New York 54. It is said this tool will accommodate all of the standard die sets designed for use with the foot-operated Hytool and power-actuated Hypress. The location of removable dies in this tool, makes it easy for the operator to insert cable and connector, it is claimed, as well as to see that they are properly placed in the die. The complete connection is then made by a single stroke of the tool.

### Reproduction Machine

**K**NOwn as the 88-R printing and developing machine, a dry process machine which produces whiteprints, in one continuous operation at a speed of 30 fpm, has been announced by the *C. F. Pease Co.*, 2630 West Irving Park Rd., Chicago 18. The machine is said



to require minimum operator attention. Tracings and sensitized papers, either cut sheets or rolls, are fed into the machine, virtually everything else is automatic, and finished prints are delivered in a matter of seconds. Optional use of revolving or sliding contact, controlled by a clutch lever, is one of the device's outstanding features. A foot treadle allows tracings and paper to be withdrawn without damage and finished prints can be delivered at front or rear by means of a lever at the front of the machine.

### Floor Machine

**F**OR rapid dry-cleaning of strip wood floors where cleanliness and sanitation are important factors, the *G. H. Tennant Co.*, 2530 North Second St., Minneapolis 11, has developed a heavy duty floor machine. Fitted with a special 16-in. factory wound steel wool roll and operated by one man, the machine burnishes dirt from the

floors. Through a vacuum system powered by a 11-in. fan, light soilage is drawn into a heavy fabric bag; heavy soilage is thrown into



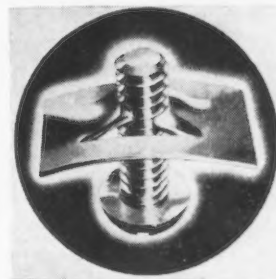
a removable hopper, by centrifugal action of the steel wool covered cylinder. The machine is powered by a two-speed 2½ or 5 hp electric motor to allow 850 or 1725 rpm drum speed.

### Wheel Puller

**I**N THE design of the Klay wheel and gear puller, manufactured by the *Scott & Ewing Co.*, Dept. N-2, Findlay, Ohio, the pulling and gripping actions are independent of each other, which is claimed to develop greater pulling power plus a safer and more positive grip on the object being pulled. Not only does the lock nut principle securely lock the hooks to the gear or wheel so that they will not slip off, but the grip is equally applied on all sides. Thus, it is said, the total force developed by the pulling screw is directed toward removing the wheel instead of part of it being diverted into gripping power. The pullers are made in 2 and 3-hook types for pulling anything from a ¾-in. gear to a 40-in. wheel or hub.

### Speed Nuts

**K**NOwn as the C7000 series, heat-treated spring steel speed



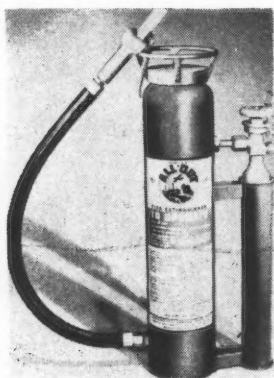
nuts, in sizes to fit the ten most popular sizes of machine screws and sheet metal screws, have been



announced by *Tinnerman Products, Inc.*, 2040 Fulton Rd., Cleveland 13. This speed nut line has been engineered to a precision formula based upon the diameter and strength of the screw with which it is used. As a result, these speed nuts are more compact and are said to withstand higher torque tightening, and provide greater tensile strength than flat type speed nuts.

#### Dry Chemical Extinguisher

**P**ERFORMING effectively, it is said, under all climatic conditions, in extreme temperatures, and in the presence of winds or drafts.



the All-Out dry chemical fire extinguisher has been produced by the *Pressurelube, Inc.*, 609 West 134th St., New York 31. All-Out dry chemical is ejected, under pressure, in a flat stream, that separates the flame from the burning material. Instantly forming a dense, fire smothering cloud over a flaming area up to a distance of 18 ft, All-Out creates an insulating barrier between the operator and the flame, providing protection from radiant heat. On hot metal surfaces the dry chemical forms an insulating film, helping to guard against re-flash. All-Out forms no toxic gases, it is said, and is a non-conductor of electricity. It is non-abrasive, harmless to finished surfaces, and easily removed with a brush. The extinguisher employs a squeeze grip nozzle for positive control, and 26 in. of 1/2-in. ID pressure hose permits rapid maneuverability of the stream.

#### Fire Extinguishers

**E**QUIPPED with trigger-touch release, a 15-lb CO<sub>2</sub> portable fire extinguisher has been produced by *Randolph Laboratories, Inc.*, 8 East Kinzie St., Chicago. A long-range hose and nozzle keeps the fire-

fighter at a safe distance from the heat of the blaze and permits easy access to overhead, side-wall or engine compartment fires. Release of the trigger automatically stops the flow. Truck and wall brackets are provided.

#### Fire Control Nozzle

**C**ONSTRUCTED in such a manner that it produces a fog, a fire control nozzle for fixed installations has been announced by the *Blaw-Knox Sprinkler Div.*, 830 Beaver Ave., Pittsburgh. The nozzle, which has been named the Aquatomic Fog Nozzle, is particularly adapted to the protection of tanks containing flammable liquids, either in tank farms or housed in buildings. The fire-stifling fog is produced by forcing water through three clear spiral passages and a clear central passage in the head of the nozzle. The fog pattern, on which effectiveness of the nozzle depends, is maintained even at greatly reduced water pressures. Air currents, whether external or internal, do not affect its action, it is said. The nozzle is best adapted to chemical, electrical, and petroleum industries. It can be used in systems that are controlled either manually or automatically.

#### Heat Block

**S**ELFCONTAINED and requiring only 1 min to reach top heat, the Redi-Heat block designed for industrial first aid, by the *Mine Safety Appliances Co.*, Pittsburgh 8, consists of a block of lightweight metal with high heat-transfer value, encased in a special cover and containing a replaceable heat charge. The charge is activated by raising and releasing a spring loaded lever, instantly creating a chemical reaction which evolves maximum safe, dry heat. Wrapped in a blanket, the block maintains its temperature for approximately 1 hr, it is said. The unit weighs 22 oz and measures 3 1/2 x 4 x 1 1/2 in.

#### Pocket-Size Marker

**F**OR production marking, identification, packaging and shipping, a pocket aluminum fountainbrush using hard felt pointed nibs, has been developed by the *Cushman & Denison Mfg. Co.*, 133 West 23rd St., New York 11. It is adapted for marking surfaces of wood, paper, glass, metal, plastic, wet or dry, hot or cold surfaces, using a wide range of instant dry-

ing marking colors which are weatherproof, waterproof and permanent. The fountainbrush is of light construction and equipped with an automatic control valve that feeds marking color by slight pressure. This feature is said to eliminate sweating, leaking and flooding.

#### Orifice Computer

**D**ESIGNED for quick orifice meter computations in industries where gas, steam or water are measured by the orifice principle, an orifice computer has been produced by *Willsonn Computers*, 925



Central Ave., Ext., Oil City, Pa. The device is adaptable in determining a wide range of deliveries, pressures, differential and sizes of orifice. Although no coefficient for the orifice is necessary for ordinary computations, correction factor scales and table of standard coefficient settings for both flange and pipe taps are provided for use where more accurate computation is desired. Made of sheet plastic material, the computer is available in a utility size of 4 3/4 in. diam suitable for field and shop use, and in a desk size of 7 1/2 in.

#### Slide Rule

**A** 10-in. slide rule, made of plastic material for greater dimensional stability, has been announced by the *Charles Bruning Co., Inc.*, 4754-10 Montrose Ave., Chicago 41. Precision graduations are not affected by temperature change, it is said. The glass indicator is mounted in a stainless steel frame that holds it firmly in place. Numerals and graduations are in red to provide ease of reading and the beveled edges of the rule are graduated in inches and centimeters. Tension on the slide is adjusted by four screws on the back of the rule.

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| Automotive Parts                   | Lawn Mower Parts              |
|                                    | Lubricating Systems           |
| <b>B</b> Ball Bearing Races        | Meter Parts                   |
| Bearing Parts (tubular)            | <b>M</b> Motorcycles          |
| Beauty Shop Equipment              | Mufflers                      |
| Beds                               | <b>N</b> Nozzle Tubes         |
| Bicycles                           | Office Equipment              |
| Boilers                            | <b>O</b> Oil Burner Parts     |
| Bus Body Frames                    | Oiler Tubes                   |
| <b>C</b> Condensers                | Perforated Tubes              |
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| <b>D</b> Display Stands            | <b>P</b> Playground Equipment |
| Drying Machines                    | Pneumatic Conveyors           |
| Electrical Equipment               | Pressure Tubing               |
| <b>E</b> Elevator Parts            | <b>R</b> Railings             |
| Exhaust Tubes                      | Road Machinery                |
| Ferrules                           | Sewing Machines               |
| Floor Scrubbing Machines           | <b>S</b> Sports Equipment     |
| <b>F</b> Food Processing Furniture | Spraying Equipment            |
| Gravity Carrier Systems            | Torque Tubes                  |
| <b>G</b> Grease Guns               | <b>T</b> Transformers         |
| Handles                            | Tricycles                     |
| Hardware Items                     | <b>V</b> Vacuum Cleaner Parts |
| <b>H</b> Heat Exchangers           | <b>W</b> Washing Machines     |
| Hydraulic Hoists                   | <b>X</b> X-Ray Equipment      |

**QUALITY!** Revere Electric Welded Steel Tubes are structurally stable, uniform in temper, and of correct analysis. Since they are formed by welding steel strip, walls are absolutely uniform. The finish is controlled and particularly suitable for plating, lacquering, painting, other coating processes. Surface is excellent for sliding parts. Available in sizes up to 4½" O.D. and in wall thicknesses to ⅜", somewhat heavier walls can be supplied in certain diameters. Our Technical Advisory Service is at your command.

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# Assembly Line . . .

WALTER G. PATTON

• Willys introduces its lightweight car to 400 industrialists, educators and editors at its Toledo plant . . . New car offers excellent possibilities for low cost production.



**D**ETROIT — Many motorists have long been wondering what the automobile industry has in mind when it talks about "light weight" cars. One manufacturer—at present a comparatively low volume producer—gave his answer to the light weight car question this week when the Willys-Overland postwar model was officially introduced to 400 industrialists, educators and editors at Toledo.

The new Willys entry in the low price field has a 104 in. wheelbase compared to 114 in. for Ford and 116 in. for Chevrolet. Gross weight is approximately 2500 lb compared with 3240 lb for a 1946 4-door Ford model. Its L-head type engine develops 70 hp at 4000 rpm compared with 100 hp at 3800 rpm for a competitive Ford model.

At a driving speed of 30 mph it is estimated that the new Willys will travel more than 30 miles on a gallon of gasoline.

Outstanding engineering feature of the new Willys is its use of independent suspension on all four wheels. In the front suspension, the axle is eliminated and in its place is mounted a transverse, semi-elliptic Dow type spring with rubber inserts at the end of each leaf, eliminating the necessity for lubrication at this location.

The ends of the spring are connected to the lower end of the steering knuckle support while the upper

end of the steering knuckle support is mounted to a control arm, operating rubber bushings, which is in turn bolted to the frame.

**I**N the rear, the differential is mounted in rubber on the frame of the car. "Swinging-type" rear axles extend from a ball joint mounting on either side of the differential to the rear wheels and are held in place by a semi-elliptic Dow type spring mounted longitudinally on both sides of the car, providing for independent motion by each rear wheel.

Overall length of the car is 182 in.; overall width is 68½ in. in front and 71¼ in. in the rear. Overall height is 64⅝ in.

One design feature of the new Willys that is immediately evident is the absence of heavy chromium decorative effects in front and the elimination of divided windshields, front and rear.

The car offers excellent visibility for the driver and with its independent wheel suspension and fully adjustable seating, should give comfortable riding qualities despite the comparatively short wheel base.

The front seat accommodates three persons while the rear seat is designed to seat two passengers. A swinging arrangement of the front seat on the passenger side allows this seat to be moved to one side permitting easy access to the rear. Doors are operated by push button latches on the inside and trigger grip handles on the outside.

**T**HE model shown this week is hand-built and the new car is not slated to go into production until about mid-1947, according to Delmar G. Roos, vice-president in charge of engineering.

At a press conference following the introduction of the new car, James D. Mooney, president and board chairman explained that it was Willys present intention to forego annual yearly models with this car. Instead, Willys intends to make changes only when necessary and convenient thus avoiding, if possible, the long delays in tooling and plant rearrangement necessitated by the introduction of new yearly models. He also explained that the price of the new car "would be competitive with Ford, Chevrolet and Plymouth in the low price field." Mooney declined to name a specific price because of shifting economic conditions.

One feature of Willys operations which has not received the attention it deserves is the high degree of interchangeability of parts and stampings which is possible with the present model setup. At present, the company is producing only the Universal Jeep and the Jeep station wagon. A new sedan delivery closely based on the station wagon and two new four wheel truck models will soon be introduced.

For each of these vehicles the basic fundamentals are similar yet

**HAS 4 - WHEEL INDEPENDENT SUSPENSION:** The first American-made car having independent suspension on all four wheels is the new Willys-Overland model 6-70. The car which will be powered by a new 6-cylinder engine and has a wheelbase of 104 in; overall length is 182 in. Gross weight is 2500 lb.





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the sales possibilities range from high school kids and returned GI's with a soft spot for the Jeep in their heart to farmers, industrial plants, road builders, electrical and plumbing contractors, job welding shops and hole digging and fire fighting companies. Willys has always emphasized the general utility of its line of cars and the demonstration this week showed clearly that the Jeep would easily perform a tremendous variety of tasks.

IT has been reported by some sources that the Jeep is an interim product which would be discontinued once the Willys passenger car is in full production. However, Willys has now announced that the Jeep is here to stay and the company has no intention of abandoning it. In view of the fact that Willys expects to make a profit this year despite plant operations at only 25 pct of capacity at present and a shutdown of five months earlier in the year would indicate that to abandon the Jeep at this point would be to give up what has thus far been a remarkably profitable item for Willys.

Despite the 5-month shutdown, Willys has produced 53,000 Jeeps this year and present production is at the rate of 350 per day. The volume of unfilled orders is now about stabilized and the company has announced that it expects to sell about the same number of units in 1947 as it will market in 1946.

Station wagon production is going forward at the rate of 60 per day but it is hoped to step this up to 300 per day. About 1200 units have been completed to date.

Most newsmen seeing the Willys plant for the first time since the war were pleasantly surprised at the housekeeping job that has been done and the general orderliness of the plants compared with wartime operations. At least during the periods when visitors were in the plants the conscientious effort of plant workers was also noticeable. The fact that Willys has thus far avoided any serious labor trouble would indicate that employee morale and efficiency is probably superior to that in a number of larger auto plants.

PERHAPS the Willys story can best be told by pointing out that Willys alone in the automotive field has thus far introduced a car which shows outstanding possibilities of being built at low production cost.

The elimination of practically all frills and extras should easily make this possible for the producer. Regardless of the fact that its products currently are selling at comparatively high prices, Willys possibilities for low cost production because of design, interchangeability of parts and an efficient labor force appear to be excellent.

### Creedon Resigns As Deputy Administrator Of General Disposal

Washington

• • • Shortly before he resigned on Sept. 26, WAA Deputy Administrator Frank R. Creedon of the Office of General Disposal asked regional directors to take "drastic measures" to dispose of surplus automotive parts worth \$271 million at manufacturers' list prices.

No reason for his resignation was given. Administrator Robert M. Littlejohn refused to say whether it had any relation to a House Committee hearing on surplus property. He did say, however, that Mr. Creedon had not been fired, and expressed regrets at Mr. Creedon's leaving WAA.

New procedures also were established for the disposition of automotive parts. These procedures apply to orders dated Sept. 23 and later. It was stated that they are designed to secure a wider and more equitable distribution of auto parts, accessories and assemblies and insure that priority claimants' orders will be satisfied.

The procedures provide that:

The entire current property list of the National Automotive Parts Office be subject to requirements of priority claimants instead of the former 10 pct set-aside.

All orders for auto parts, accessories and assemblies received under WAA Program No. 40 shall be held for two calendar weeks immediately following the issuance of the monthly NAPO property list and the supplementary list.

At the end of each two weeks' period, all orders will be carefully reviewed for allocation.

All orders from priority claimants shall be sorted into the proper order of priorities.

Willys has a long way to go before it carves out a large percentage of the industry's output but there can be little doubt that it is aiming its shots at the mass market. Its possibilities for becoming a factor in that market should not be overlooked, particularly with the present teamwork between management and engineering.

Allocation of priority orders will be made as follows: federal agencies, certified veterans, RFC for resale to small business, states and political sub-divisions and instrumentalities, eligible non-profits institutions.

When needs of all priority groups are satisfied from current availability, normal channels of trade will receive allocations in the following sequence: first, orders from automotive fleet operators, service garages, and dealers; second, automotive distributors and manufacturers.

No allocation is necessary if total number of items ordered is less than current availability.

If the total quantity ordered is in excess of the final current availability of any item, allocation will be made by satisfying first the smallest orders.

### Authorizes Dealers To Adjust Prices of Cars

Washington

• • • Effective Sept. 28, passenger car dealers may obtain from OPA the authorization to adjust their maximum prices so as to obtain the net cost, plus the customary prewar margin, for the alterations or addition of items other than regular or optional equipment and accessories to new passenger cars which may be ordered by a customer.

Under the order (Amdt. 8, MPR 594), a dealer may obtain permission to add the actual cost of labor and equipment, plus a margin of 33 1/3 pct of such cost to his maximum selling price. Authorization is obtained from the regional OPA office or from the nearest district office to which the power of such authorization has been delegated.



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• **FTC will take cement basing point decision to Supreme Court . . . Expected to again ask Congress for f.o.b. mill pricing law.**



**W**ASHINGTON — Gratification of the steel and other industries using the same pricing method was equaled, if not exceeded, by the chagrin of the Federal Trade Commission over the recent decision of the U. S. Circuit Court of Appeals in Chicago, which said the multiple basing point system does not violate the anti-trust laws. Carrying broad implications bearing on merchandising economics as practiced by highly important segments of business, this two-to-one opinion, handed down in the long embattled cement industry case, is accepted widely as setting up a guidepost to cases the FTC has pending against steel and other manufacturers.

It now remains for final determination by the Supreme Court whether the Commission's ancient crusade for an f.o.b. mill pricing system is to be slapped down and brought to an end. For it is a matter of course that the Commission in its zeal to preserve what it affects to nurse as a sanctified formula will ask the Dept. of Justice to go to the highest court of the land and ask for a writ of certiorari.

The petition for review must be filed within 90 days after a decision has been handed down. It is expected that the government will act

in much less time than that both because of the importance it places on the basing point decision just handed down in Chicago and because of similar cases it, as well as the Dept. of Justice, has under way.

**S**PREAD of the basing point system over recent years clearly has weakened the FTC's position. In steel this development has been particularly notable. It has considerably increased both the number of basing points and the list of products on which base prices are quoted. It was this multiple system's legality that was given favorable recognition in the cement case.

Distinction was made between this method, whereby there is absorption of freight in order to meet competition and the practice charged against the single basing point system of adding "phantom freight" made possible by the absence of a nearby basing point. To illustrate this method, the court cited the Corn Products Refining case which the Supreme Court condemned in a unanimous decision. It is believed that the Commission will seek to make the most of this point and despite pricing practices under the multiple basing point system attempt to show that it does involve "phantom freight."

Cropping from the old Pittsburgh-plus case the FTC instituted against the U. S. Steel Corp., is this issue. Still hanging fire in the Circuit Court of Appeals in Philadelphia the latest development was a request by the steel corporation that the Commission clarify its cease and desist order so as to permit the practice of freight absorption. Complaint has been general in the steel industry that the Commission, clinging fast to its f.o.b. mill platform, has disregarded the vast expansion of the steel pricing method into a broad multiple basing point system.

The Chicago court, however, took a slap at the Commission's position holding that it was not well founded. On the contrary, it implied that rigid f.o.b. mill pricing created a monopoly within a given territory. It proceeded further to say that refusal to permit freight absorption

in order to reach market would increase unit costs and thereby result in higher prices for consumers.

**"T**HE change from the present system to one conforming with the Commission's order would be like jumping from the frying pan into the fire," the court said through Judge Otto Kerner, with Judge J. Earl Major concurring. Dissenting was Judge Evan A. Evans.

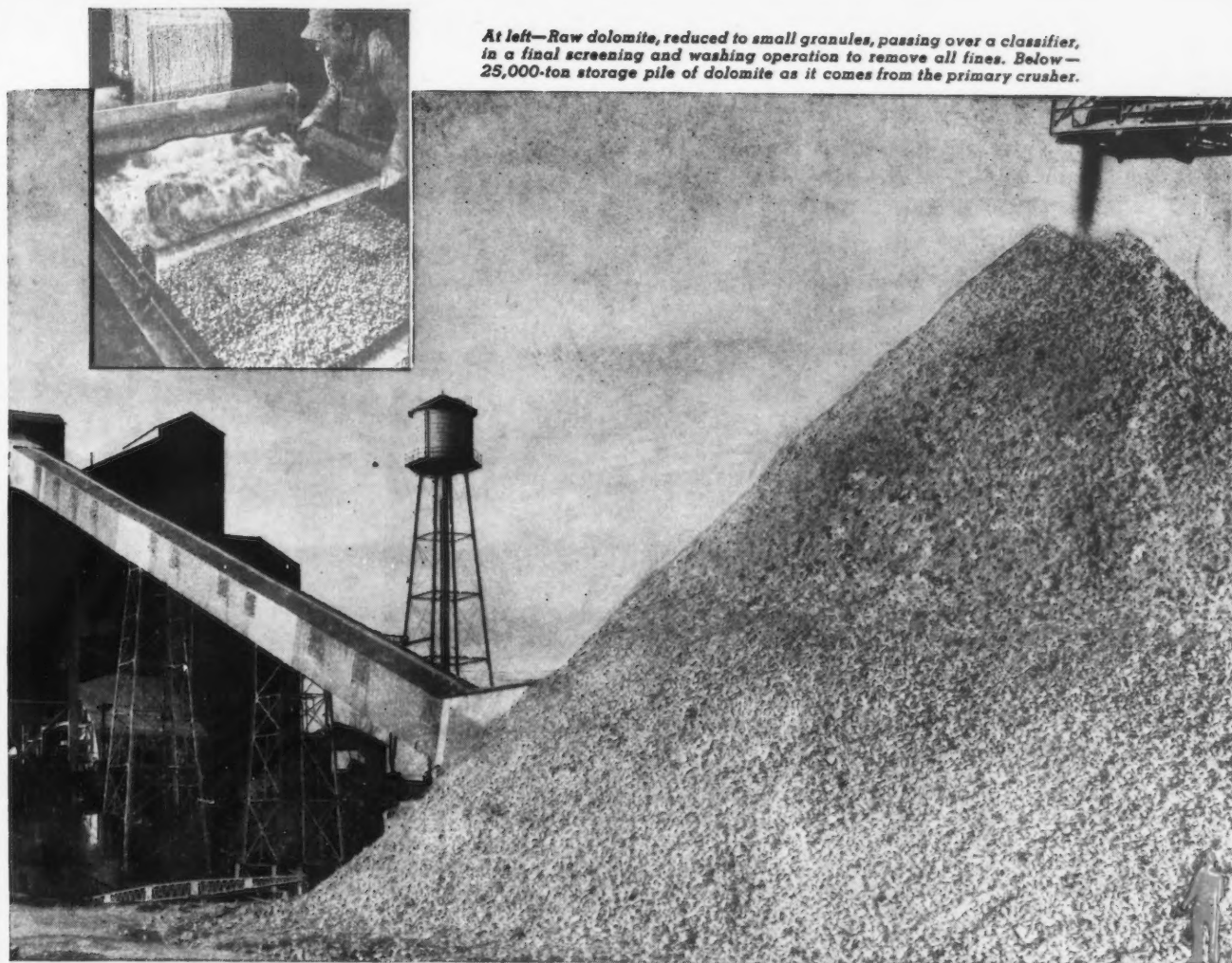
The court added that decisions made in cases subsequent to the old cement case decided by the Supreme Court in 1925 have in no way modified the holding that no restraint on competition was effected by the use of the basing point system. Citing the Supreme Court's decision in the Corn Products Refining case, the lower court said that the use of the basing point system under the Clayton Act, the FTC's legal weapon, remains an open question. It was indicated that such use is permissible.

The Supreme Court in the Corn Products Refining case indicated clearly that elimination of the multiple basing point system would involve profound changes in economic and marketing practices. In the cement case, the lower court said that it was impressed "not only with its magnitude and scope, but also with the limitless possibilities and consequences involved."

**"T**HE Commission's order," said the Circuit Court, "proposes to eliminate the sale of cement on a delivered price basis, notwithstanding the almost unanimous desire on the part of dealers and purchasers that it be so sold. Instead, it would require that cement be sold on an f.o.b. plant basis. Any and all discriminations, and they are calculated to be more numerous and complicated than under the system here condemned, will furnish the basis contempt proceedings in this court.

"We are to be made a police force for the purpose of guarding and directing members of this industry, wherever located in a highly technical and complicated field. Before any court gives its assent to such

At left—Raw dolomite, reduced to small granules, passing over a classifier, in a final screening and washing operation to remove all fines. Below—25,000-ton storage pile of dolomite as it comes from the primary crusher.



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an ambitious program, it should be certain that it is required to do so by the law and facts."

The court again, just as the Supreme Court did in the Corn Products Refining, curtly directed the Commission's attention to the fact that Congress repeatedly has refused to go along with Commission-inspired bills declaring the basing point system illegal and setting up an f.o.b. mill pricing method.

Nevertheless, these sharp reminders have left the Commission cold. It proposes to persist so long as possible in its demand for elimination of the basing point system and the substitution of the f.o.b. mill practice. It is claimed that the stage was set immediately after the cement case was decided for the Commission to renew its legislative drive for f.o.b. mill pricing, with "big business" again the shipping boy. This was the view taken of questionnaires sent to the FTC and Dept. of Justice by Representative Estes Kefauver, D., Tenn., Chairman of the Monopoly Subcommittee of the House Small Business Committee.

**T**HE questionnaire for the FTC was released on Oct. 1. The one sent to the Dept. of Justice was released on Oct. 3. It has been sug-

gested that both were nicely timed with the forthcoming Congressional election. By coincidence or otherwise, they came on the heels of the decision in the cement case. The FTC was asked for a complete report of its activities in enforcing fair trade practices and anti-trust laws in the last 10 yr. The Anti-Trust Div. of the Dept. of Justice was asked for a report of its activities over the past 8 yr in carrying out its anti-trust responsibilities.

Reports are current that both the FTC and Dept of Justice were expecting to receive these questionnaires and that as a result the rather exhaustive material desired by the Committee has already been prepared or virtually completed for presentation to the Committee which begins hearings on Oct. 15 on "economic concentration" and its retarding effect on small business. Many of the questions asked of the two government bodies are quite similar in nature, but differing somewhat in language.

The Commission's cue to rehash recommendations for f.o.b. pricing is seen in the Committee's request for a list of various investigations of the past 5 yr, among them investigations of the basing point system. There are numerous other

questions sent to both the Commission and the Dept. of Justice under which they could make a report on the basing point system. An instance is the questions sent to Justice for a report on trade practices.

**B**OTH the Commission and Justice have brought action against industries for use of this pricing method. There appears actually to be rivalry between the two in instituting such proceedings. The House Committee itself has recognized an overlapping of activities between the two government organizations. This is evidenced by a question directed to both agencies asking if a clearer distinction should be drawn between the proper functions of each so that the danger of duplication would be eliminated.

Explanations of the distinction between the functions of the Commission and Justice are vague and leave the distinct impression of duplicated efforts. But such as they are, it has been pointed out that the FTC operating under the Federal Trade and Clayton-Robinson-Patman Act directs its efforts against combinations and conspiracies, price fixing and price discrimination. Justice, it was explained, operates under the Sherman Law against combinations in restraint of trade.

The Committee will get reports on these and many other points, and likely will go along with recommendations made by FTC and Justice, seeing to it that they can present their cases before the election. It is doubted that industry representatives will fare so well.

Even now the cement industry, just given a clean bill of health by a court in Chicago, is under an anti-trust attack in a court in Denver at the hands of the Dept. of Justice. One of the charges of restraint of trade grows out of the use of the basing point system.

### To Sell Plant Additions

Washington

••• WAA has announced that it is offering for sale or lease \$1 million worth of government-built additions to the Birdsboro Steel Foundry, Birdsboro, Pa., together with machinery and equipment.

It is also offering for sale or lease a Buffalo turbine parts plant, formerly operated by the Worthington Pump & Machinery Corp.

### THE BULL OF THE WOODS

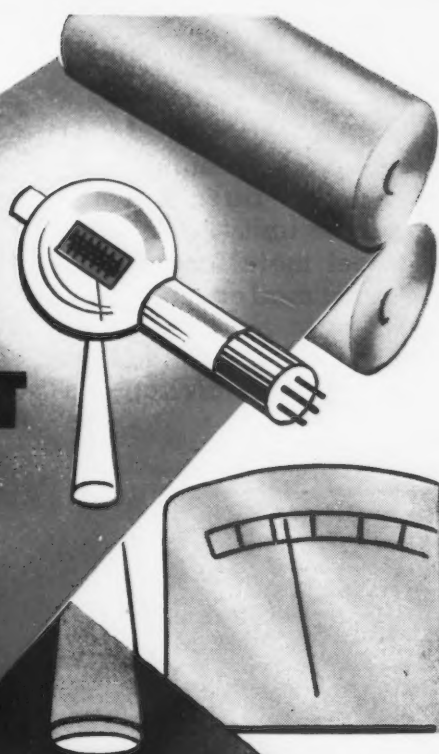
BY J. R. WILLIAMS





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See the Measuray demonstrated at the Sheffield plant in Dayton. Bring samples of work to be checked to see for yourself the savings in material and time, elimination of losses in destructive testing, and the increase in uniform quality which the Sheffield Measuray can bring you.

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• SAE National Aeronautical Meeting considers "buzz bomb" power units . . . Seattle sheet metal user starts direct mail campaign in effort to increase western allotments . . . Light metals in forefront in Northwest.



**L**OS ANGELES—A comprehensive engineering symposium on air transportation—with an interesting glimpse of things to come—comprised the theme of the West Coast's first postwar SAE National Aeronautic Meeting. Discussions by outstanding aeronautical engineers covered the powerplant and air transport fields, with reports on possible utilization of "buzz bomb" power plants for helicopters, auxiliary power sources on conventional aircraft, and such industrial applications as powerless heaters.

Pulsating-jet engines, of the type which drove the Nazi "buzz bombs," merit consideration for more constructive uses, according to L. B. Edelman, Navy Dept., Washington, D. C., of project Squid, Princeton University. He said this power plant, requiring only air, liquid fuel, a shaped tube, some form of flow check valve and a spark plug for starting, can produce thrusts of up to 900 lb per sq ft with fuel consumption of only about 1½ lb an hr. Mr. Edelman presented the results of tests to show that the engine is economical, yields speed up to one-half that of sound, requires neither expensive, high-temperature alloys, nor costly machining operations, and operates

on any liquid fuel available without noticeable variation in performance.

Use of pulsating-jet engines was recommended for propulsion of pilotless aircraft for military applications, mail transport and flight research. Studies were said to indicate that helicopters equipped with jets at blade tips can be lighter and less complicated and that a pulsating-jet engine can be used also for launching gliders.

**C**OMPARATIVE studies of the techniques of flight employed by men, insects and birds were included in the talks. Discussing "A New Approach to the Flight Problem," W. B. Stout, consulting engineer, Detroit, pointed out the advantages of the insect approach to flying over the bird approach. "Insects fly successfully with pay loads with wings of very much smaller proportion than birds, and make higher speeds proportionately," Stout said.

Manufacturing ideal "weather" for the interior of postwar luxury airliners was discussed by Bruce E. Del Mar, Douglas mechanical test engineer. Ideal conditions are maintained regardless of outside temperature and humidity, according to Del Mar. Studies show that 20 cu ft of fresh air per min must be provided in a cabin for each passenger to avoid any indication of staleness within a cabin, and that winter weather interior temperatures should range from 68 to 72 deg and summer temperatures from 74 to 78 deg. Temperature conditions in the cabin were found to be greatly influenced by effect of heat transferred by radiation between passengers and cold sidewall panels and windows. Panel heating, window insulation and warm air diffusion throughout cabins have overcome this problem. Tests at Douglas resulted in rejection of any system of reclaiming or recirculating air within the cabin.

Twenty-two papers were given at the 3-day session with subject matter ranging from passenger comfort and power controls to air transport regulations.

**S**EATTLE—The Seidelhuber Iron & Bronze Works is taking a new tack to alleviate the critical steel sheet shortage which Frank V. Seidelhuber, Jr., vice-president, says threatens to close their water heater manufacturing plant by January.

It will be recalled that several months ago this organization announced that it intended to construct a 50,000 ton sheet and bar mill in this city and that surveys were underway to determine the practicability and economics of such an operation. It is understood that this contemplated mill is still in the "survey" stage and immediate relief of the sheet scarcity is being sought through a direct mail campaign to chambers of commerce, builders and the rank and file of citizenry of this city, urging everyone to write to their congressman and demand that this area be allocated a greater quantity of sheets.

Frank V. Seidelhuber said, "This is a move to have western manufacturers put aside the petty rivalries which have always characterized the relations of producers of this area, and pull together for their common welfare." Mr. Seidelhuber reports that he has been informed by "our last large source of steel that they cannot give us any steel after the first of the year." It is Mr. Seidelhuber's contention that possible relief of the situation would be afforded by a price adjustment which would no longer make it more profitable for eastern mills to sell in their own backyard than on the West Coast. He claims that most western manufacturers would gladly pay a price premium which would take into consideration the added cost of handling small orders and additional freight. He believes that the necessary increase in price to make the western market attractive to eastern producers would be so negligible as not to be reflected in the prices of most finished products.

Other sheet metal users of this area are, of course, considerably concerned about the sheet scarcity but so far as could be determined



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(or legislate production)

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no similar action is being contemplated by any other fabricators and the Seidelhuber organization is carrying out their mail campaign on their own.

\* \* \*

**SPOKANE**—Shrouded in considerable mystery is a report circulating in this area to the effect that a company is being organized to manufacture magnesium industrial equipment and that already a contract for \$64 million worth of goods has been signed.

First public announcement of this proposed venture came from Art Garton, state director of conservation and development, while presiding over a meeting of the State Columbia Basin Commission. Mr. Garton reported that the wartime utilization of magnesium in the Pacific Northwest was a direct result of a cash grant given by the first Columbia Basin Commission in 1936 to Washington State College to match a federal grant for a small research project at Pullman.

No details of this rumored project have been uncovered and Mr. Garton has stated that at present he is unable to reveal any information on either the financing or operators of the project.

The addition of this proposed industrial development to the already existing facilities of The Permanente Metals Corp. aluminum plants here might well entitle Spokane to become known as the "light metals capital" of the nation. The Trentwood rolling mills of Permanente produced 14,500,000 lb of aluminum sheets during the month of September which is reportedly 2,500,000 lb in excess of its established quota for that period. Production of at least 16,000,000 lb has been set for the month of October and John R. Meek, works manager, has stated that he expects this quota to be exceeded by 2,000,000 lb if an additional 600 men can be hired to relieve the labor shortage.

Total employment at the Trentwood rolling mill and the Mead reduction plant is expected to level off at approximately 3500. The present backlog of orders booked for the aluminum rolling mill is said to total more than 50,000,000 lb. It is stated that a roofing company in the southern part of the United States has made inquiry as to the possibility of getting 1,000,000 lb of aluminum sheets a month

beginning within the next two months.

The fourth of the six potlines at the Mead reduction plant was scheduled for operation this week, but has been delayed because of the scarcity of labor. Production of aluminum ingots still lags behind the capacity of the rolling mills.

There has been considerable evidence of a renewed interest in the Metaline district of Washington as a producer of zinc with the American Zinc Co. in possession of many claims in the Slate Creek section and U. S. Smelting and Freeport Sulphur becoming interested in operations there, it has been reported. This area is a geological freak according to mining men and has a mining history dating back to 1881. Production was discontinued in 1945 because of the power and labor shortage after producing 11,325 tons of zinc concentrate running 60.5 pct and 3600 tons of lead concentrate running 72.25 pct. Production this year is not expected to exceed that of 1945 because of the strike which closed down operations for two months.

**PORTLAND**—Light metal production took another boost last week as the Troutdale, Ore., alumina reduction plant under lease from WAA by Reynolds Metal Co. got into production with the first of its four potlines. Arkansas bauxite is converted into aluminum and sent to other Reynolds plants for fabrication. Delay in opening the plant after signing of the lease in July of this year is attributed to the necessity of a sprinkling system to eliminate the escape of fumes which were said to have been deleterious to stock and agriculture in the immediate vicinity. Similar work is being done on the other three potlines and these are scheduled for production within the next three months. Peak payroll is expected to be approximately 800.

Operation of the Troutdale plant is taxing the power load of the Bonneville Power Administration according to Paul J. Raver, administrator, who has been urging all industries to keep standby electrical generating equipment ready for immediate service. This latest addition in this area is reported to bring the total power load to 623,000 kw for aluminum production alone on the Bonneville system.

Aluminum will make another inroad on the province of steel if the

plans of the Aluminum Corp. of America work out. At the recent launching of the first three cargo-passenger ships from the yards of Oregon Shipbuilding Corp. for the Alcoa Steamship Co., Harmon Lewis, president of the company, announced that bids will be asked within the next few months for two aluminum ships. Tentative specifications indicate the ships will be 400 ft long and have a cargo capacity of 8000 tons—1500 tons more than a ship of conventional steel construction.

**SAN FRANCISCO**—During his visit to this city to address the American Legion convention in his post as president of the National Assn. of Manufacturers, Robert R. Wason, president of Manning, Maxwell & Moore, Inc., of New York, took occasion to give THE IRON AGE his views on the industrial future of the West Coast.

"The West Coast is developing a tremendous industrial empire. Before the war this was a great agricultural empire with branch plants of eastern companies adequately supplying your industrial needs," he stated.

"When you developed your own steel industry on the Coast you laid the foundation for your independence of the East. You have created the base for an economy that is, or can be, complete in itself. Freight or shipping costs have always been working against western economy and now with every likelihood of these rates increasing throughout the country, the economic distance from East to West increases and as the West grows more remote it will be necessary for the East to come West to compete."

Speaking of the potentials in export, Mr. Wason pointed out that such industrial developments as now going on in Brazil with its \$90 million steel plant, will eventually redound to the benefit of the West Coast because of the improved economic conditions which will result in the South American country and which in turn will bring about a demand and the ability to pay for West Coast made products.

In discussing the continuing battle of NAM against the OPA, Mr. Wason pointed out that this was in no sense a political fight, but rather resistance to a principle which was "unsound, uneconomic and a restriction of freedom."



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cally the even temperature so necessary to the successful control of physical properties of the metal in accordance with "S" curve data.

Isothermal Bulletin #113 contains complete details and will be sent on request, together with reprints of pertinent technical articles.

The Ajax Experimental Laboratory will gladly treat specimen work—without cost or obligation—providing advance proof of the remarkable new physical properties this process can impart to your particular work.

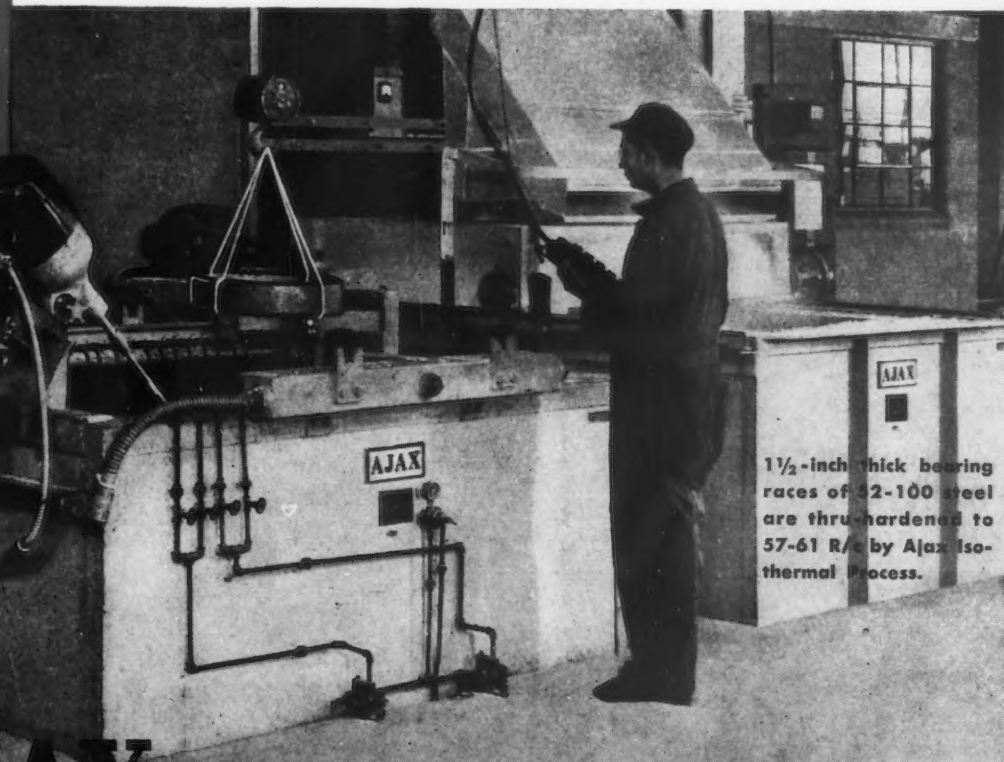
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HULTGREN

**ELECTRIC SALT BATH FURNACES**

# European Letter . . . JACK R. HIGHT

• Industrial designers' exhibition displays new and modern paraphernalia impossible to obtain . . . Squatter's movement, sponsored by Communists, calming down.



LONDON—Under the auspices of a British group of industrial designers, one of the most heartbreaking exhibitions of my experience is now under way in the Victoria and Albert Museum, here in London. Though the name was inspired by an outbreak of resurging economic nationalism, the goods on display are just a collection of all those things dear to a woman's heart that she cannot get in today's world without a magic wand.

All of the clothing and the household goods, the travel luxuries, chrome gadgets, fully automatic what's-its plus one space ship are included under one roof, attractively enough displayed to draw jealous tears from any long-suffering housewife. The exhibition has been well publicized in England for months under the name, "Britain Can Make It," and manufacturers and trade associations have gone to great lengths to exhibit adequate evidence that Britain can make anything of which civilized people might dream.

A few examples are used in the opening rooms of the show to illustrate how war-gained industrial experience is being adapted for peacetime use. The new refractory development which lengthened the life of aircraft exhaust stacks is now being used in the production of kitchen enameled ware, and the new

color Anodizing for aluminum ware is attributed to war-gained experience.

AFTER the materials which are used for production have been analyzed in modern decor, the array of new and modern paraphernalia for postwar living begins to unfold itself. A visit to the exhibition one day before the grand opening by the King offered interesting commentary on what may happen in the bright new world if one of the key designers should ever run amuck. All of the bewildering maze, carefully laid out to guide one effortlessly in the front door and out the back, was hopelessly confused on official press day by painters, ladders, closed off passages and casual detours in and out of fire exits. Evidence enough was at hand of a brighter day to come, as at almost every puzzling, answerless turning there was lying on the floor an as yet unlettered, surrealist hand pointing aimlessly at the carpet.

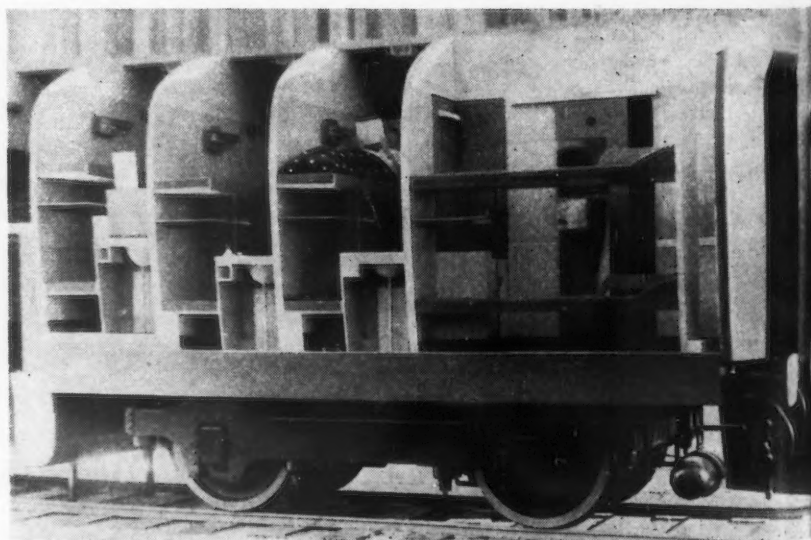
The foremost question facing the postwar housewife, and unanswered until this effort has been graphically solved, is a whole section devoted to the question, "Who shapes the egg cup?" The answer, we should have guessed, is the industrial designer. After various questions entering the head of the puzzled young man in his shirtsleeves

at the drawing board, such as shape—the hen starts this particular answer, we are told; size, the hen has a hand in this one also; color, texture, material, and some others are decided, we wander off to a plastic molding press which is said to be capable of turning out 3000 egg cups per day.

THIS whole section, while making up a most interesting portrait of how the industrial designer makes his living, is in my opinion destined either to be the scene of ugly rioting or the most masterful display of self-restraint in human history. To make the point as clear as possible that the hen does determine certain of the physical characteristics, the designers have helpfully presented a stuffed Rhode Island Red (full grown and mounted inside a huge egg, this must settle for all time the chicken-vs.-egg dispute, but we aren't sure which way), as well as a few cages, which we guess will contain the real live thing by the time His Majesty arrives.

Now with a shiny press casually emitting egg cups by the bucketful and the responsible evil-doers in front of them, we predict that at least some weak-willed Englishmen and women are going to give way to their emotions and place the rightful blame for their present

IN THE DIM FUTURE: This section of a third class sleeping car illustrates what the "Britain Can Make It" exhibition hopes will be possible in the way of car construction 5 to 20 yr hence.







*Take one at random\**

That's what your assemblers do; and the closer you can come to giving them *uniform* screws the closer they'll come to giving you top production.

Culls and duds will slow down the best assembly line because they annoy and upset the operators.

One *sure* way to improve production is to make sure that the screws you furnish are as near uniform as humanly possible. And since CORBIN Screws are noted for their uniform quality, why not join the thousands of successful manufacturers who stick to CORBIN?

SS-3

*\*it's a thoroughbred —  
it's a CORBIN.*

**CORBIN SCREW DIVISION**  
*The American Hardware Corporation*  
**NEW BRITAIN • CONNECTICUT**

Warehouses:  
New Britain • New York • Chicago

**CORBIN**  
REGULAR SLOTTED

*Screws*

chronically eggless state on the chickens.

Who could blame the poor housewife who had just been told by her grocer the old familiar, "I know you are supposed to get an egg this month, but they haven't arrived yet," if she casually wrung the neck of one of the hapless caged specimens. And if a hen should get too ambitious and feel it her duty to lay an egg within reach of the seething throngs, a real, one-eyed shell egg, not the powdered type. Well, there must be more pleasant things to write about.

\* \* \*

THERE is also an ample supply of good china, pottery, cutlery, electric appliances, kitchenware, furniture, and clothing for everyone to convince all comers that production is going for export, as they know it is not available on the British home market. There is a studied carelessness about the manner in which one nylon stocking and one shoe are exhibited within reach of all comers, and not even glued to the case. The designer may think he has the situation well in hand when he carefully puts one nylon in the vault while the other is exposed, but I prefer to believe that some ingenious operator will find a way to use just one empty glamour sheath.

Under the promising heading of "Designers Look Ahead" the visitor has an opportunity to wander into one of those dream worlds usually found only in the pages of *Esquire*, this time in more or less

real, and at least three dimensional existence. The exhibition here carefully intersperses a streamlined bicycle, (still pedaled, however,) and an interplanetary space ship; a super-streamlined sailboat that just misses flying and a third class railway sleeper that crowds more people into less space than has ever been done before; a really promising looking portable electric sewing machine in a cast aluminum carrying case—the case splits to become the two halves of the work table—20 lb, and a streamlined air-conditioned bed that will credit Buck Rogers as well as hay fever addicts. Another eye-catcher is a plastic traveling bag, to be made of felt preformed material in two pieces.

The mystifying part of all of the above is that we thought we would have them all in our own little apartment by now, and the best the miracle men promise us now is that, "in the light of present technical developments, these things may happen in 5 to 20 yr." The man who presented the plastic bag, however, may have tipped his hand by labeling it, "The Bag of 194X." Is he hinting that he may jump the gun and get this thing ready before the 5-yr limit, regardless of what the designers' council thinks on the matter?

\* \* \*

THE homesteading, or squatter's movement, as it is known here, (See THE IRON AGE, Sept. 12, p. 97) has settled down to quiet mutterings, after having broken

out into organized anarchy sponsored by the Communist Party in London. Having started in the provinces as a spontaneous movement by the hopelessly overcrowded into disused government camps, the Communists recognized a situation in London that promised considerable benefits in the way of publicity and cashed in on it, despite ultimate action against them by the government.

London's hotels and many of its blocks of apartments were requisitioned during the war for government uses. The process of dislodging government offices when there is no public building going on has been proceeding slowly, and there have been numerous complaints. In addition, when the various government departments did derequisition a particular building, there is a complex business of offering it to other government departments before returning it to the owners, and in many cases extensive repairs to be done before it is ready for housing.

THE Communists took advantage of this situation to spot vacant apartments, one block of luxury suites in particular, and a hotel that had been derequisitioned but was as yet vacant. The party then notified some homeless and desperate people, most of them not members of the party, that they intended to find homes for them. In spite of political leanings, such an appeal was irresistible to many, and there were plenty of takers for the buildings that the Communist-sponsored movement invaded.

Despite the sympathetic feelings that most ordinary citizens had for the homeless involved, this was just the kind of desperate lawlessness that the government could not ignore. The Communists went further in their efforts to arouse sympathy, and threatened to invade every empty house or apartment in the city. After an uneasy week, when the police guarded vacant premises where threats were heard, the government took legal proceedings in prompt fashion to evict the squatters, and then offered amnesty and alternative accommodation if they would leave peaceably.

The newspapers have been frank to admit that the situation, despite a general withdrawal by the squatters, represented a victory for the Communists, who got what they went after in the effort.

**CYCLIST'S DREAM:** The caption furnished with this picture of a British bicycle states that it is fitted with a dynamo or motor set similar to the present-day hub dynamo which stores energy when the cycle is traveling downhill and releases it for climbing hills. The absence of tubular construction is noteworthy.





# Costs Cut

## BY ECONOMICAL METAL MELTING ..

Lectromelt Furnaces have proved conclusively three points of Economical value.

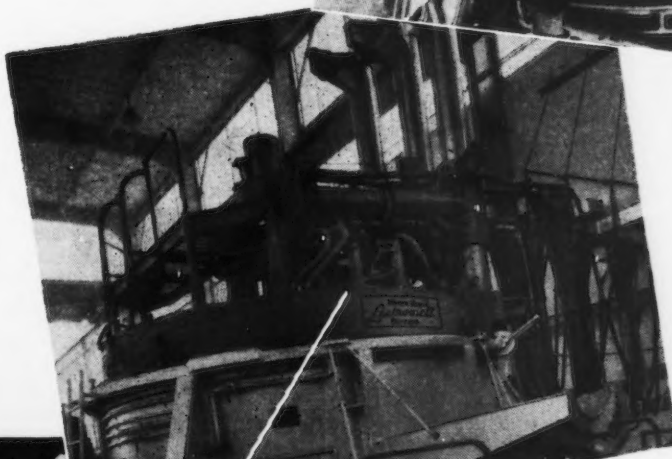
### ELECTRODE CONSUMPTION

Users find that electrode consumption during operation of Lectromelt Furnaces is 14% less than with fixed roof furnaces on the same type of work. One user reports as much as one-third reduction in electrode consumption.



### ROOF LIFE

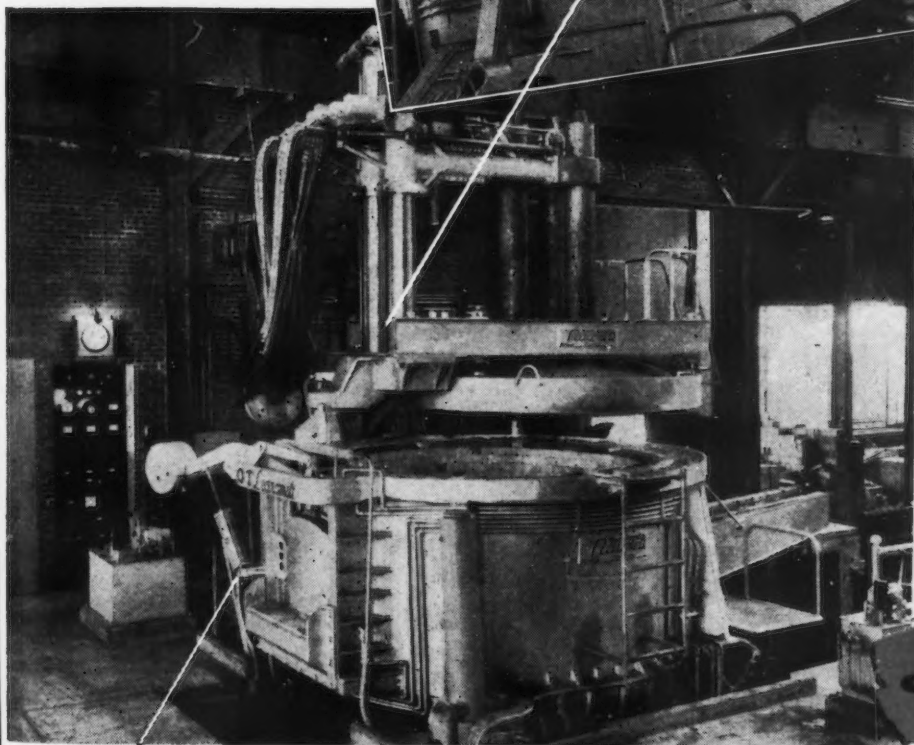
Users of Lectromelt Furnaces have found that roof life with top charge furnaces is 18% longer than with door charge furnaces on similar production.



### POWER CONSUMPTION

In instances where top charge Lectromelts have replaced door charge furnaces of equivalent shell capacity savings of as great as 50 KWH per ton have been realized.

Write for complete details



MOORE RAPID  
*Lectromelt*  
FURNACES

**PITTSBURGH LECTROMELT FURNACE CORPORATION**

PITTSBURGH... 30... PENNA.



**WESLEY N. GORDON**, manager, alloy sales division, general sales department, U. S. Steel Supply Co.

• **Wesley N. Gordon** has been appointed manager of alloy sales division in the general sales department of the U. S. Steel Supply Co. He will head the sales effort of U. S. Steel Supply in the alloy field and will have jurisdiction over alloy sales in Boston, Newark, Baltimore, Pittsburgh, Cleveland, St. Paul, Milwaukee, St. Louis and Chicago, and will maintain his headquarters in Chicago.

• **J. F. Comiskey** has been named sales manager of the air conditioning controls division of Minneapolis-Honeywell Regulator Co. at Chicago.

• **Wallace C. Husted**, vice-president in charge of all activities of the Chase Brass & Copper Co. in the Cleveland area, has been transferred to Waterbury, Conn., and placed in charge of organization and plant operations under **Richard D. Ely**. **John S. Coe**, who has been assistant to Mr. Husted in Cleveland, has been elected a vice-president of the company and will be in charge of all activities in the Cleveland area. **Richard R. Quay**, counsel for the company, has been elected an assistant secretary.

• **A. H. Crowley** has been named Mercury sales manager of the Lincoln-Mercury Div. of Ford Motor Co., Dearborn, Mich. He is a veteran of 20 yr experience with the company.

## PERSONALS

• • •

• **Robert T. Dunlap** has been elected executive vice-president of the Colorado Fuel & Iron Corp., with headquarters in Buffalo. He also is vice-president in charge of all manufacturing operations of the Wickwire Spencer Div. of CF&I.

• **Paul S. Strecker** has been appointed director of personnel of the E. W. Bliss Co. He will direct the company's labor and industrial relations at its five plants located in Brooklyn, Toledo, Cleveland, Salem, Ohio, and Hastings, Mich. Mr. Strecker's personnel work includes 13 yr with General Motors Corp. He was the first personnel director of Fisher Body Div.'s Grand Rapids plant. Later he was in charge of personnel at the Nash-Kelvinator aircraft plant at New Orleans, and their propeller plant at Lansing. **W. J. Woods** has been named purchasing agent of the rolling mill division of the E. W. Bliss Co. at Salem.

• **Eugene E. Griesse** has resigned from his position as secretary and treasurer of the National Screw & Mfg. Co., Cleveland, after almost 38 yr of service. **George R. Kloppman** has been elected to fill the vacancy caused by Mr. Griesse's resignation. **Harold H. Hummel** has been appointed assistant treasurer of the company. Mr. Kloppman has served National Screw as director of industrial relations. Replacing him in his former position is **Richard H. Leukart**.

• **Milton Lewis**, vice-president, has resigned from the Fluor Corp., Ltd., Los Angeles.

• **John J. Kenny** has been named manager of sales promotion for the entire International Business Machines Corp., with headquarters in New York. He was previously IBM field operations executive, and prior to that, manager of the postwar planning department. He joined the company in 1917 and has held various sales and executive positions.

• **J. J. Kraus** has been appointed district sales manager of Sharon Steel Corp., with offices in Detroit. He will also continue as vice-president of the Detroit Seamless Steel Tubes Co.

• **Kenneth Austin**, financial writer for the *New York Times* since 1927, has joined the public relations staff of U. S. Steel Corp., New York.

• **Joseph H. Fulmer**, formerly connected with the Ethyl Corp., and Sharples Chemicals, has joined the engineering department of Pennsylvania Salt Mfg. Co., Philadelphia.

• **Frederick A. Purdy** has been appointed manager of the new Los Angeles plant of Joseph T. Ryerson & Son, Inc. Mr. Purdy joined Ryerson in 1931. Serving first as an engineer at the Buffalo plant of the company, he later represented the firm in New York state, heading the Rochester district sales office for a period of 4 yr. **Thomas E. Williams**, a 23-yr Ryerson veteran, has been put in charge of the operating and service divisions. He saw service first at the Chicago plant of the company and later at the Buffalo plant. **Vernon D. Rogers** has been appointed office and credit manager. He became a member of the Ryerson organization in 1936, interrupting his career in office administrative work to join the Army from which he was separated early this year.

**FREDERICK A. PURDY**, manager, Los Angeles plant, Joseph T. Ryerson & Son, Inc.





## PERSONALS

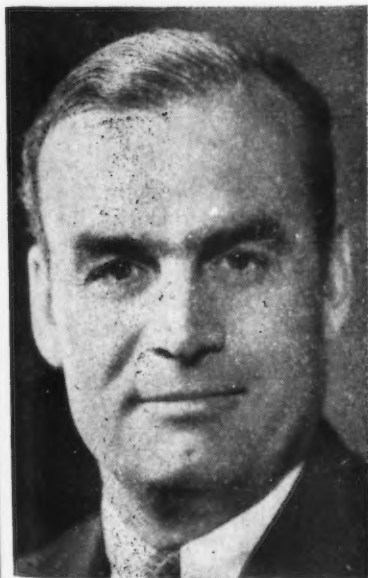
• **Robert M. Arnold**, president of Arnold Engineering Co., Chicago, has been elected a member of the board of directors of Allegheny Ludlum Steel Corp., Pittsburgh. Arnold Engineering is a wholly-owned subsidiary of Allegheny Ludlum.

• **Albert M. Stedfast** has been elected president of Stedfast & Roulston, Inc., Boston. **William C. Cook** has been named assistant secretary of the company.

• **Robert D. Kelley** has resigned as vice-president and director of Detroit Steel Corp., Detroit, and general manager of Craine-Schrage Steel Div. However, he will remain with the organization in an advisory capacity. **V. R. Bates**, who succeeds Mr. Kelley as general manager of Craine-Schrage Steel Div., has been assistant general manager. **J. M. Gillard** has been appointed assistant general manager of the division. **Howard V. Clark**, vice-president in charge of sales of Detroit Steel Corp., has been elected director of the company.

• **C. M. Taylor** has been elected executive vice-president of the Lincoln Electric Co., Cleveland. Mr. Taylor has been associated with Lincoln Electric since 1916. He was appointed vice-president in charge of sales in 1928 and has served on the board of directors since 1927.

**C. M. TAYLOR**, executive vice-president, Lincoln Electric Co.



• **Harrison Wood** has been named New York district manager for SKF Industries, Inc. Mr. Wood, assistant district manager since 1941 and for many years a field engineer for the firm, succeeds **John D. Williamson**, who has resigned after serving as head of the district for 23 yr.

• **Mogens H. Bendixsen**, who has been associated with the export division of Owens-Illinois Glass Co. for the past 6 yr, has resigned to become vice-president of Melvin Pine & Co., New York. Mr. Bendixsen will be in charge of the company's Toledo office.

• **D. P. Wertheimer** has been appointed sales manager of the Sterling Bolt Co., Chicago, replacing **J. B. Epstein**, who is no longer associated with the company. Mr. Wertheimer has been affiliated with the Sterling Bolt Co. for the past 6 yr as assistant sales manager.

• **Milton H. Gardner**, formerly regional service manager at Chicago for Electro-Motive Div. of General Motors Corp., has been made regional service manager at St. Louis. Mr. Gardner will be assisted by field engineer **J. E. O'Leary**, formerly of the central region, district engineer **Earl Stroud** who has been located in St. Louis in the same capacity since 1935, and district engineer **A. M. Dodd**, who has been transferred from Cincinnati. **M. L. Williams** has been appointed parts and stores representative with headquarters also in St. Louis, and **R. H. Beight** has been named district engineer at Fort Worth, Tex. **Mariano A. Montero** has been made district engineer with headquarters in San Luis Potosi, Mexico, to serve Mexican railways. Mr. Montero will be assisted by service engineer **Fred M. Smith**, formerly of LaGrange, Ill. Denver service headquarters has been transferred to the jurisdiction of the St. Louis region and will be in charge of district engineer **Gerald C. Smith**. **C. R. Wood** has been promoted to branch parts manager in charge of the new Jacksonville, Fla. locomotive repair shop, and **LeRoy F. Shaw** of the parts department at LaGrange will be branch parts manager in charge of the new shop at Baltimore.



**JAMES C. HARTLEY**, chief metallurgist, Barium Steel & Forge, Inc.

• **James C. Hartley** has been appointed chief metallurgist for Barium Steel & Forge, Inc. He had formerly been director of research for the Heppenstall Co. in Pittsburgh. He has engaged in research work with Crucible Steel Co., was chief metallurgist of Minerals & Metals Corp. and Aluminum Forgings, Inc., and also was a consultant with Frank Roth Co., New York. Mr. Hartley will continue his research work at Barium's Canton, Ohio plant.

• **Carl R. Hellstrom** has been made president of Smith & Wesson, Inc., Springfield, Mass. Mr. Hellstrom has been associated with the company since 1931, first as engineer consultant and later as general superintendent, works manager and vice-president.

• **Fred A. Koch**, credit manager of the Philip Carey Mfg. Co., Cincinnati, has retired after 42 yr of service with the company.

• **W. E. Lewis**, vice-president of the Pittsburgh Lectromelt Furnace Corp., has been placed in charge of the newly opened Chicago branch office. He has been associated with the company for the past 25 yr.

• **Dr. Frances H. Clark**, formerly metallurgist with the Western Union Telegraph Co., has joined the staff of A. R. D. Corp., New York.

• **Charles L. Huisking, Jr.**, formerly treasurer of Aircraft Screw Products Co., of Long Island City, N. Y., has recently been discharged from the Army and has resumed his duties as treasurer of the company and, in addition, has been made assistant sales manager.

• **Harry A. Sutton** has been named engineering advisor and assistant to the president of the Ryan Aeronautical Co., San Diego. He had been associated with Consolidated-Vultee Aircraft Corp. where he was director of engineering for the company's 12 divisions.

• **J. C. Lungerhausen** has joined the engineering staff of the Bowser, Inc. industrial pump division, Fort Wayne, Ind., in the capacity of chief development engineer. For the past 5 yr he has been development engineer for the Blackmer Pump Co., Grand Rapids.

• **Norman J. Froelich** has been named general manager of sales of Portsmouth Steel Corp., succeeding **John K. Boll**, who has retired. Mr. Froelich served as administrator of limitation orders for wire products during the war in the Steel Div. of the War Production Board. For the past year he has been eastern district sales manager for Reynolds Wire Co. Mr. Boll has been manager of wire product sales for Wheeling Steel Corp. since 1923. He became general manager of sales in July when Portsmouth Steel Corp. took over the wire mill. **Frank W. McLain** has been appointed assistant general manager of sales of Portsmouth Steel Corp. He was formerly affiliated with American Steel & Wire Co. and Fostoria Screw Co.

• **William Rodgers**, formerly superintendent of Republic Steel Corp.'s 98-in. hot strip mill in Cleveland, has been appointed assistant chief metallurgist of the company. Mr. Rodgers came to Republic through the Donner Steel Co. of Buffalo, which was merged with Republic in 1930. He came to Cleveland in 1940 as chief metallurgist of the Cleveland district and in 1945 was appointed assistant superintendent of the hot and cold strip mills and later was promoted to superintendent.



A. P. LERCH, chief tool design engineer, Hyster Co.

• **A. P. Lerch** has been appointed chief tool design engineer for the Hyster Co., Portland, Ore. With a background of 6 yr at Hyster, he will be in charge of all tool designing for Hyster's three plants. **R. W. Ager** has been appointed new personnel manager of the Portland plant. Mr. Ager has been with the company for 10 yr, serving most recently as assistant export manager.

• **Thomas C. Yarnall**, who has been manager of sales planning of the replacement tire sales division of the B. F. Goodrich Co., Akron, Ohio, has been named manager of store merchandising, in which capacity he will be responsible for all the merchandising programs with company owned outlets. **Robert L. Reeves** has been appointed to succeed Mr. Yarnall.

• **D. E. Inman** has been appointed engineering manager of the district engineering and service department of the Westinghouse Electric Corp. He will be located at the East Pittsburgh plant. Mr. Inman came to Westinghouse in 1925. After 10 yr in the control engineering department, he joined the Pittsburgh engineering division of the company as a consulting and application engineer. In 1938 he was transferred to the Westinghouse Cleveland office and became engineering and service manager there in 1941, relinquishing that post to assume his new position.

• **Paul W. Heasley** and **Milton P. J. Hickey** have been named treasurer and assistant treasurer respectively, of Graham-Paige Motors Corp., Willow Run, Mich.

• **C. W. Rowan** has been made assistant manager of the Somerville, Mass., branch of the Ford Motor Co. He became associated with the company in 1929 at Milwaukee, his work being largely in the selling field.

• **Daniel P. Murphy**, formerly general manager of the Gould Coupler Works, Depew, N. Y., has been appointed vice-president in charge of operations for the Symington-Gould Corp.'s two plants at Rochester and Depew.

• **W. H. Hartman**, for 46 yr purchasing agent of the Cleveland Electric Illuminating Co., Cleveland, has retired. He is succeeded by **J. D. Hogg**, formerly purchasing agent for the Montreal Engineering Co.

## OBITUARY...

• **Murray Kice, Jr.**, chief engineer of American Blower Corp., Detroit, since 1937, died Sept. 25 after a 2-yr illness.

• **Herman E. Krulewitch**, 53, secretary of Simon Krulewitch, Inc., Chicago, died recently.

• **Edward J. Weisenheimer**, 68, assistant personnel director of the Metal & Alloy Specialties Co., Inc., Buffalo, died Sept. 24.

• **Leslie C. Maurer**, a sales executive for the DeSoto Motors Corp., Detroit, died recently.

• **Charles A. McGill**, 51, manager of the central division of the replacement tire sales division, B. F. Goodrich Co., with headquarters in Kansas City, died suddenly on Sept. 12 while on a fishing trip. He had been with the company since 1922.

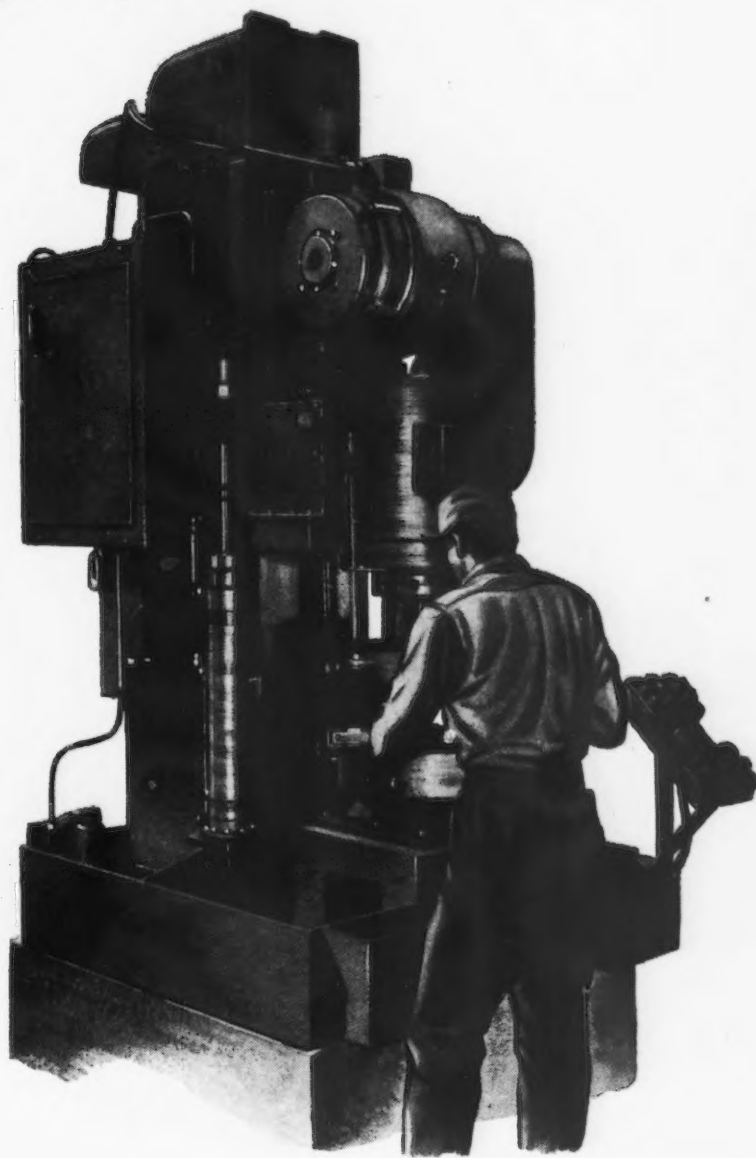
• **George B. Hoey**, 56, for 31 yr in the employ of the Washington branch of Lyon, Conklin & Co., Inc., died suddenly Sept. 12. He was manager for some years and became a director of the company in 1944.



# SEE FAIRBANKS-MORSE FIRST FOR MOTORS

ON countless difficult jobs Fairbanks-Morse Motors have proved their outstanding qualities. However exacting the requirements, however heavy the service, users find that these motors have the efficiency and the stamina that mean economical, uninterrupted power.

You, too, can invest in Fairbanks-Morse Motors with confidence. Fairbanks, Morse & Co., Chicago 5, Illinois.



## Fairbanks-Morse

*A name worth remembering*



Diesel Locomotives • Diesel Engines  
Scales • Motors • Pumps • Generators  
Magnetos • Stokers • Railroad Motor  
Cars and Standpipes • Farm Equipment

# Dear Editor:

## MACHINE TOOL SHIPMENTS

Sir:

The Belgian Assn. of Metalworking Industries has asked me whether I could report to them regularly figures on American machine tool shipments, broken down, if possible, into various classes of machines, and foreign and domestic destinations. I would be much obliged to you if you could give me an idea where the above data are available.

L. G. RUCQUOI  
Technical Consultant to the  
Steel and Mechanical Industries  
of Belgium and Luxembourg  
Belgium Economic Mission  
New York

● The report on machine tool shipments previously issued by CPA and the Census Bureau was discontinued in June. However, the National Machine Tool Builders Assn., Cleveland, issues monthly data on shipments, new firm orders, cancellations, and unfilled orders, which are published regularly in THE IRON AGE.—Ed.

## CLAD MAGNESIUM

Sir:

Will you please send us a tear sheet of the article, "British Patent Magnesium Joining Process," which appeared in the Sept. 12 issue.

D. A. COTTON  
Master Mechanic's Office  
Delco-Remy Div.  
General Motors Corp.  
Anderson, Ind.

## TUNGSTEN DETERMINATION

Sir:

I read in Chemical Abstracts, an abstract of your article, "Color Determination of Tungsten, Titanium, and Columbium," which appeared in your publication Apr. 4, p. 66. I would like to have a reprint of this article.

DONALD D. VAN SLYKE  
Hospital of the Rockefeller Institute  
for Medical Research  
New York 21

● Unfortunately our supply of Apr. 4 issue is exhausted. However, you may be able to obtain a copy from H. W. Wilson, 960 University Ave., New York 52, a dealer in back number magazines. The charge is about 50¢ per copy for old issues.—Ed.

## FINISHES FOR ALUMINUM

Sir:

In your Aug. 29, Sept. 5 and 12 issues, you published an article entitled "Surface Finishes for Aluminum." I would appreciate your sending me two sets of tear sheets on this article.

A. MAHER  
Secretary  
Armco Co.  
Middletown, O.

## CUSTOM GUIDE

Sir:

We would appreciate your kindness in forwarding available information concerning the latest issue of the Custom House Guide. Our present copy is the 1939 edition and we desire to obtain a later issue.

W. L. SPENCER  
Chief Accountant

Stoody Co.  
Whittier, Calif.

● The latest issue of the Custom House Guide, 1946 edition, is already completely subscribed to. However, if you desire a copy of the 1947 issue, when it is available, it is suggested that you place your order now with the Custom House Guide, 10 Bridge St., New York. The cost is \$20 a copy.—Ed.

## HOT-BLAST CUPOLA DESIGN

Sir:

I should appreciate very much receiving two copies of the article "Hot-Blast Cupola Design" which appeared on pp. 44 through 50 of the Aug. 29 issue.

W. M. AKIN  
President

Laclede Steel Co.  
St. Louis

## WELDING TECHNIQUES

Sir:

I would like tear sheets or a reprint if available, of "How to Weld Aluminum" which appeared in the June 20 to July 11 issues.

SAMUEL BAUM  
Associate Welding Engineer  
Philadelphia Naval Shipyard  
Philadelphia 12

● We did not reprint this series of articles and regret that all cut copies of the issues have been clipped. However, we have been informed that the Reynolds Metals Co., 2500 S. Third St., Louisville, reprinted this series, and suggest that you write to the company, attention of Mr. G. W. Birdsall, Manager, Technical Editorial Service.—Ed.

## SELECTING BEARING MATERIAL

Sir:

We have just read with interest the article entitled "Selecting Nonferrous Bearing Material" by Norman E. Woldman, which appeared in the Sept. 5 issue of your magazine. We would like to secure a few copies of this article.

M. T. LUDWICK  
Secretary

Indium Corp. of America  
New York

Sir:

We would appreciate a clipping of the article, "Selecting Nonferrous Bearing Material," by Norman E. Woldman, from the issue of Sept. 5.

J. WAMPLER  
Roots-Connersville Blower Corp.  
Connersville, Ind.

## PRESSURE WELDING

Sir:

In the Aug. 8 issue the following appears in Newsfront: "Investigations in Germany reveal the development of a method of simultaneously welding and forming thin-walled aluminum parts. This process of pressure welding . . ." We are interested in investigating the procedure described and would like to ask whether you have information concerning the source of the above paragraph.

G. O. HOGLUND  
Aluminum Co. of America  
New Kensington, Pa.

● German work with pressure welding was described extensively in the article "Pressure Welding Thin Aluminum Parts" by H. E. Linsley, which appeared in THE IRON AGE, Aug. 8. This article contains references to the original source in Germany of the methods discussed.—Ed.

## MANNESMANN PROCESS

Sir:

I would like to have a tear sheet of the article on "Hot Extrusion of Steel Pipe" which appeared in the May 30 issue.

H. M. FABRY  
Managing Director  
Poldi Steel Co. (England) Ltd.  
Sheffield 5, England

## TIME STUDY TRAINING

Sir:

Will you please send me six reprints of an article published in your Aug. 1 issue entitled "Training Time Study Men," by T. R. Turnbull of the Johns-Manville Corp., Manville, N. J.?

GUY J. BATES  
Industrial Engineering Section  
Manufacturing Staff  
General Motors Corp.  
Detroit 2

● Reprints have not been made, therefore we are forwarding tear sheets of the article.—Ed.

## TURBINE AND TOOL MATERIALS

Sir:

We are interested in tear sheets of the articles, "High Temperature Alloys" appearing in the June 20 issue, and "Practical Tool Room Heat Treatment" in the June 27 issue.

M. B. PARADIS  
Edison General Electric  
Appliance Co., Inc.  
Chicago 44

● We have reprinted the articles on "High Temperature Alloys" which appeared also in the May 23, 30 and June 6 issues, and "Practical Tool Room Heat Treatment" appearing also in the June 6, 13 and 20 issues, for which we make a nominal charge of 25¢ and 50¢ per copy, respectively.

## SPRAYING FILLER METALS

Sir:

Please send us five tear copies of the article on "Spraying Filler Metals on Brazed Joints" in the Mar. 26 issue of your publication, p. 52.

H. A. FOLGNER  
Handy & Harman  
Los Angeles



THE NEW ARITHMETIC IN STEEL

IF: 3 TONS CARBON SHEET STEEL  
EQUAL 30 FINISHED UNITS  
THEN: 3 TONS N-A-X HIGH-TENSILE  
EQUAL 40 FINISHED UNITS

**A DEMONSTRABLE FACT: MANY USERS OF HOT AND COLD ROLLED SHEETS CAN INCREASE PRODUCTION OF UNITS 33% BY MAKING 3 TONS OF STEEL DO THE WORK OF 4**

These days, the many production advantages of N-A-X HIGH-TENSILE steel are more important and more apparent than ever before.

With this low-alloy, high-tensile steel, you can use lighter sections . . . lighter, but of *equal* strength and *greater* durability. Lighter sections mean less steel per unit, more units per ton. Production of four units for every three

units normally produced is a typical result.

Good formability permits

N-A-X HIGH-TENSILE to be deep-drawn and formed to intricate shapes. At the same time, its greater corrosion-resistance, excellent weldability, high fatigue-resistance and great impact toughness bring both product improvements and production savings. Many fabricating, finishing and handling operations are simplified or eliminated.

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# Industrial News Summary...

- **Industry Entering Period of Caution**
- **Steel Industry Gets House in Order**
- **Price Decision Expected in November**

**C**ONCURRENT with the extremely high operating rate and the substantial volume of inquiries for finished steel products, both the industry and its consumers may now be considered to be entering a "period of caution" out of which will come concrete evidence of 1947 trends in steel activity. Even while steel consumers are clamoring for material and in some cases ascribing shutdowns to steel shortages, they nevertheless are concentrating their full attention on the control of inventories so that somewhere near a normal production pattern can be established.

For the first time since VJ-Day steel companies are making definite headway in an attempt to make delivery promises which can be accepted at somewhere near their face value. In previous months bonafide and honest delivery promises have been changed because of strikes or other conditions beyond the control of the steel companies.

Within the past few weeks many large steel units have made a complete analysis of their order books, have reshuffled business and have produced new delivery dates for consumers which, barring strike tie-ups, will represent a fairly good commitment. So strong in the industry has been the attempt to clarify distribution problems that district sales offices are being informed daily on production schedules so that customers can also be fully informed.

All this good endeavor, however, hangs upon the slender thread of hope that no new widespread strikes or other maldistribution practices will occur over the next several months. Should a wave of strikes materialize and should the railroad car shortage fulfill the estimates of the more pessimistic observers, the fine balance of steel products now in the process of being built up will tumble down again just as it did during many months of this year.

**A**LTHOUGH some automobile manufacturers have attributed curtailed operations to a shortage of steel, this factor has only been one of several. Such stoppages have been caused by a combination of shortages and maladjustments in the supply line which would include lead, copper, tin and possibly antimony. Indirect factors in the curtailment of some manufacturing including automobiles have been current isolated labor difficulties which have blocked up distribution channels at strategic points and also a slow but consistent change in management's thinking concerning the full capacity of the market to absorb projected volumes of new cars and other consumer goods.

Under the surface of present-day high order volume, high production and reported demand for finished products is a substrata of hesitation occasioned by the thinking of some segments in the industrial groups which look for a "corrective" period to set in sometime late this year or early in 1947. In the metalworking fields opinion leans heavily towards the probability that the hesitation and possible backtracking will be

mild and will eventually have the effect of evening out inventories, substantially testing current prices and finally laying the groundwork for a basic control-free peacetime industrial cycle.

Practically all steel officials believe that for the long pull, steel demand will more than support a high operating rate over the next 3 to 4 yr. For the immediate future, however, many of these officials and their customers believe that the steel situation will grow progressively easier compared to present-day chaotic conditions, with a much better balance between supply and demand occurring by mid-1947. In previous peacetime active periods it was not unusual to have delivery promises of from 3 to 5 months concurrent with the steady flow of material shipped on previous orders.

**T**HE steel industry this week again belied the pessimistic observers on production by raising its rate from 90.5 pct of rated capacity to 91 pct. Indications are that the industry will be able to maintain its ingot output at around 90 pct of capacity throughout this month. The scrap situation, however, remains far from clarified and incoming shipments to the mills spell trouble for this Winter.

The slow moving steel price situation is beginning to take shape in the form of definite negotiations between steel industry representatives and the OPA. Despite reports to the contrary, negotiations have already begun and are about one quarter completed. The industry is submitting data covering returns on steel products during July, August and September. If the present pace of discussion between steel members and the OPA continues a final decision on price revisions may be expected before Dec. 1. Present indications are that increases to be granted will be on a specific product basis and will not reflect a general across-the-board upward revision.

**O**NCE again through no fault of its own the steel industry will find the all-important price problem being settled at a time just preceding steel labor contract negotiations. Several years ago an attempt was made to keep the two factors separate, but conditions in industry and in government dictated otherwise. Whatever decision the OPA makes regarding steel price adjustments cannot fail to have a bearing on labor negotiations.

With most steel labor contracts expiring on Feb. 15, 1947, it is expected that negotiations will be opened on wages and working conditions about the middle of January next year. The steel union as yet has not held a major wage policy committee meeting at which demands are usually discussed and put in official form. Such a meeting is expected to take place before the middle of December. It is significant that there will be much less time between the opening of negotiations and the end of present contracts than was the case a year ago.

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• **WAREHOUSE INVENTORIES**—Warehouse inventories are in very bad shape, particularly on sheets. There are virtually no galvanized sheets in any warehouse in the country, cold-rolled galvanized, and hot and cold-rolled sheets are in about the same shape everywhere. Shipments from mills are down, and contrary to expectations, third quarter receipts were less than second quarter, and prospects are that fourth quarter receipts will be less than third. Alloys are about the only product reasonably available, and some warehouses are getting 5 to 6 weeks delivery from mills. The warehouse situation is further clouded by freight absorptions, and with delivery prospects becoming worse, the warehouses are going to have to wait until the distribution loosens up unless CPA should take a hand, which it is too late to aid the fourth quarter.

• **PODBREZOVA IRONWORKS**—These ironworks which are the largest in central Slovakia are being modernized in order to produce 100,000 tons of raw steel per annum. The employees are contributing to the plan in the form of a loan without interest, taking the shape of one working shift per month which will amount to about \$100,000 per year.

• **STANDARD PIPE**—The unprecedented demand for standard pipe, extending even beyond the housing program, has jammed order books of mills far into next year. One company indicated that business now on order will carry them entirely through 1947, and the chances of obtaining any early delivery on new orders are practically nonexistent. Mills have been surprised at the substantial tonnages required by industrial plants for plant expansion, reconversion, and rehabilitation.

• **ADDS NEW PRODUCT**—Joslyn Mfg. & Supply Co., producers of stainless steel bars, have added wire to their production and are establishing Fort Wayne, Ind., as a freight basing point for wire. Freight charges will be based also from any other published basing point for these products.

• **ADD PRIORITY ARGUMENT**—A large steel mill supplying the Chicago district has found that certified orders received which carry a priority aggregated 35 pct of total production for a single month.

• **STAINLESS STEEL**—Stainless steel demand and deliveries can well be compared with carbon steel products, since mills are being pressed daily for deliveries that are already far behind. Some mills have been allocating portions of customers' orders for each month's shipments, asking them to specify what items in their allotted tonnages they would prefer. In so far as possible, these mills are trying to satisfy customer preference. However, there are probably far greater tonnages that are being carried over than there are being delivered. Six to eight months delivery promises seems to be general.

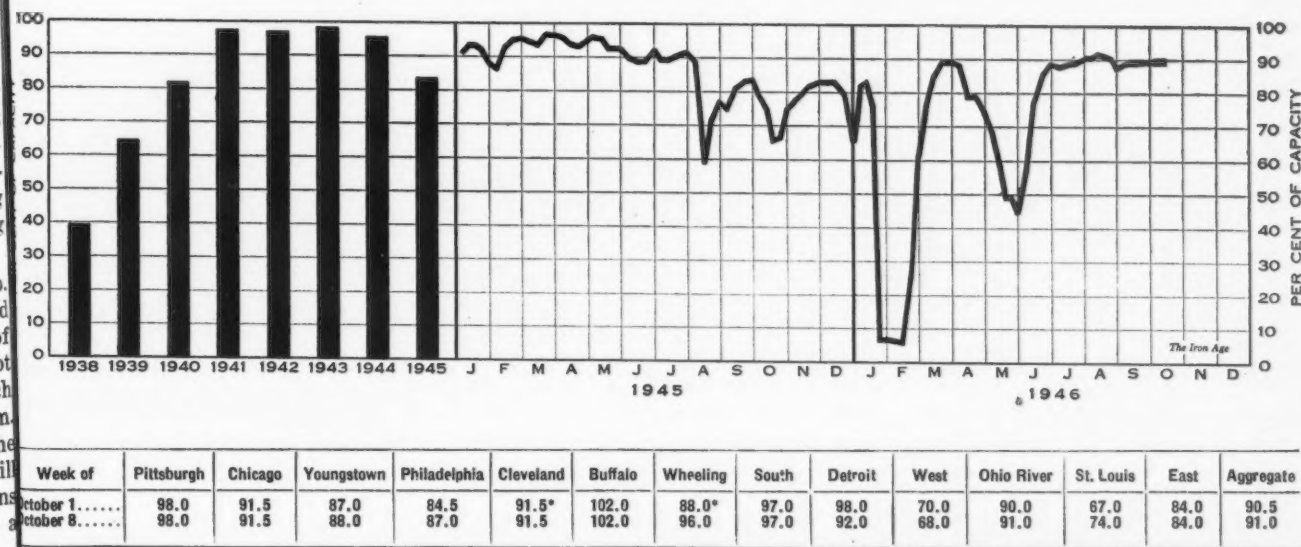
• **AUTO STEEL OUTLOOK**—November looks like a poor month for the automotive industry because of the steel outlook. Automobile companies which have been operating on deliveries plus stock find that present high production rates eat up inventories rather quickly. In addition, the backwash of the Pittsburgh power strike, a recent labor disturbance in Chicago, priorities and the generally disappointing output of sheet mills is being felt in the Detroit area.

• **ALLOY STEEL**—The supply of standard commercial alloy steel items is far better than any other type product, with mill schedules filled but producers accepting orders for 60 to 90 day delivery. There is no comparison in the demand for alloy products as against the demand for stainless or carbon steel products. There will be very small if any carryover into the first quarter of 1947 on alloy items, and those where a carryover exists will be in very specific products.

• **GEAR SALES**—The Gearing Industry, as represented by the members of the American Gear Manufacturers Assn., shows a decrease in volume of sales for August 1946, as compared with July 1946, of 9.6 pct. This report does not include turbine or propulsion gearing. The index figure for August 1946 was 368.

• **TRUCK CEILINGS UP**—OPA price ceilings have been lifted from most heavy trucks and all motorcycles. Trucks affected are those of 30,000 lb gross weight and above, which includes 10-ton trucks. OPA said the items were freed from price control because they have "little effect on either business or living costs."

Steel Ingot Production by Districts and Per Cent of Capacity



\* Revised.



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## Eye Near Term Steel Market With Caution; Long Range Prospects Good

By TOM CAMPBELL  
News-Markets Editor

### New York

• • • Practically all steel officials believe that for the long pull steel demand will more than support an operating rate over the next 4 yr or so which will not only be above the break even point but which may average between 75 and 85 pct of rated capacity. For the immediate future, however, many steel officials and their customers who have been questioned believe that the steel situation will grow progressively easier with a definite balance between supply and demand by the middle of next year.

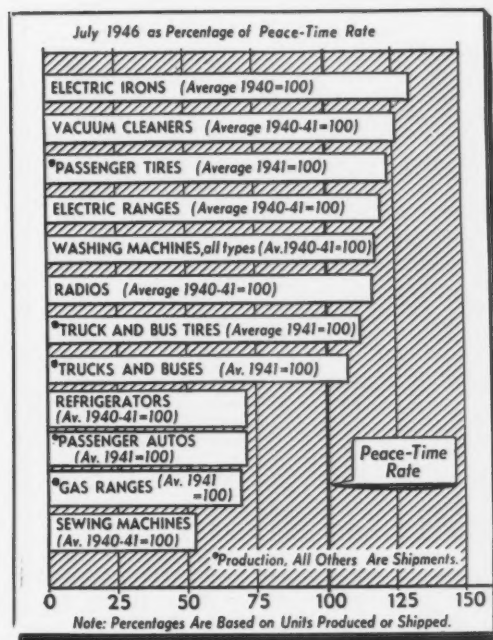
Steelmakers and their customers are quick to point out that the probability of a mild recession late this year or early 1947 resolves itself into a matter of the terms used, or what constitutes a recession. Latest opinion in the industry, whether it be right or wrong, does not support the belief that there will be a sharp decline in steel ingot output over the next several months or that demand will dry up.

On such an important question where most of those interviewed were loathe to stick their necks out it was difficult to obtain clear-cut opinions which were not overly qualified. It was obvious from the result of most information obtained that a steel strike in 1947 could not be ruled out and that if it occurred it would have somewhat the same retarding effect on deliveries as that which took place this year.

According to many sources in the metalworking field a far greater proportion of steel and other metals is being supplied through black market operations than is generally supposed. It was the belief of reliable sources that until manufacturers could

### PROOF OF THE PUDDING:

*When the items shown in the bars at the bottom of this chart start coming off the assembly lines at a breakneck pace manufacturers will have the long sought answer—will the public scramble to take them off the shelves?*



be free of the necessity for filling in production gaps with black market steel or could dispense with paying out large sums of money for steel at warehouse ceiling prices because it was unobtainable from mill sources, the current rush for supplies could quite reasonably change its tune on short notice.

A case in point as one major steel official put it, and which reflects the thinking of many steel consumers is that involving the common steel nail. Nails are being sold to the ultimate consumer for prices so far out of line that they are sometimes two to five times the so-called ceiling price. The unfortunate part, producers and manufacturers point out, is that the mark-up neither benefits the original producer or the employees whose work is expended on both making and using the nails.

Steel companies are obtaining no more than the ceiling price for the nails and must sit back along with warehouse interests and view one of the greatest disappearing acts in history, by which the nails disappear from the legitimate channels and show up later in black markets where the prices are not only fantastic but downright disgusting to legitimate makers and dealers.

Some manufacturers, especially small ones who are supplying parts to large manufacturers, have reluctantly gone into the black

market to pick up supplies in order to fulfill their commitments covering parts. They argue that if they do not live up to their commitments somebody else will replace them and a probable good postwar customer relationship is supplanted.

Other manufacturers who have not catered to black markets have found that their costs are up sharply because they have had to purchase from sources other than the steel plant itself and thus have paid legitimate higher prices. The sum total of these and other actions today has produced, according to reliable sources, a growing resentment on the part of manufacturers and the ultimate consumer against higher costs and higher prices even though it is realized that there is no single person or industry to blame.

Coming in for its share of condemnation in an oral survey among steelmakers and manufacturers is the OPA. It is argued on all sides that the lack of realistic treatment of prices and the establishment of artificial differentials between the prices of various steel products has brought about a maldistribution of steel unmatched in the industry's history.

The sum total of the high cost, high price and maldistribution picture is that manufacturers recently have begun to revamp their production programs, scrutinize closely their inventories and tak-

ing a sour look at some of the fantastic "potential and backed-up demand" figures.

Despite the facts: That the public at large may have changed its demand pattern because of higher prices and nonavailability of goods; that a careful analysis by some sources, indicate that holders of savings banks' accounts and U. S. savings bonds are in a category of people who intend to hold on to them, and that strikes and labor unrest have dampened the enthusiasm of many market analysts, steel officials and their customers do not expect in the near future a recession of serious proportions.

The majority interviewed, however, definitely look for the metal-working industry to enter a period soon when customers will spend most of their time balancing out the inventories they have before indiscriminately placing a huge volume of new orders. Once manufacturers have caught up on the component parts which have been in short supply and match these with the substantial inventories of other materials the fabrication and completion of finished products will swell far beyond what is generally considered to be a normal flow of goods.

What reception manufacturers

obtain early next year when the number of finished products being turned out becomes far greater than current output will determine the future pattern of steel order volume and steel operations. For the long pull, however, a return to normal steel market operations without price and production controls will find a proper relationship between various steel products and a strong competition between all steel companies for the business which it is felt will develop in the next few years.

### Nail Premium May Be \$20

Washington

• • • Apparently deciding that its proposed \$15 a ton premium payment for wire nails would not provide sufficient stimulus to overcome the deficit in nail output needed for the housing program, officials of NHA and CPA are now considering upping the bonus to \$20 a ton for housing size nails.

The plan, as discussed with industry members, would be retroactive to Oct. 1, and would continue through March 1947. Announcement of full details of the premium payment plan, which was to have been made this week, now awaits discussion with labor leaders in the nail industry.

### Girdler Anticipates Prosperous Future And Heavy Steel Demand

Cleveland

• • • "Barring unnecessary disturbances, the steel industry faces a prosperous future," T. M. Girdler, chairman, Republic Steel Corp. told members of the Assn. of Iron & Steel Engineers at the annual convention and exposition Oct. 1. "The sharp fluctuations in its operating rate have caused steel to be called the 'prince and pauper' industry, Mr. Girdler continued, and because steel is almost the universal raw material, steel operations depend entirely upon the rate of operations of steel buyers.

"This fact is both an advantage and a disadvantage to the industry and because of it, it is only logical to assume that the next few years should see the steel industry at a close-to-capacity peak.

Linked with unprecedented domestic demand is the necessity for world reconstruction and the fact that the steel industry outside of the United States has suffered serious war damages, Mr. Girdler stated. He continued: "The future is not entirely without serious questions. Strikes and industrial unrest have undoubtedly decreased the nation's potential purchasing power. How much this will affect the overall total demand cannot be estimated. We do know, however, that a continuation of this unrest, added to the necessity for increasing wages, may have an unhappy effect upon an otherwise bright picture.

"Secondly, I feel that our long range stability and promise of prosperity may be clouded if industry expands too rapidly in an effort to meet an abnormal, accumulated demand for goods.

"There is always, of course, a need for industrial expansion and improvement. If that need is not met, industry stagnates.

"However, this normal expansion is based on a sound, healthy 'look ahead' and not on a desire to 'capture and exhaust' markets as rapidly as possible.

"On the whole it seems to me," he said, "that barring unnecessary disturbances, the steel industry faces a prosperous future."



### CHAMPAGNE FOR FRANCE:

Like carrying coals to Newcastle or oil to Oklahoma is this scene in which Baldwin Locomotive officials christen a new diesel switcher. The engine is being christened by Capt. N. A. Concordet chief of the French North African Railway mission, who got no jewelry for the task. Spectators include Baldwin president Ralph Kelly, on the tracks, with Edouard Ricard, left, and L. W. Metzger on the engine.



## Current Lake Shipments Point to Adequate Iron Ore Supply This Spring

By W. A. LLOYD  
Cleveland Regional Editor

### Cleveland

• • • All indications point to a 60-day supply of iron ore on hand Apr. 1, 1947, contrary to rumors of an impending shortage before navigation opens in the spring, according to qualified observers here.

Rumors of a shortage of iron ore, stemming largely from the apparent lassitude in the Great Lakes movement and fears of inclement weather during the balance of this season, are not borne out by the facts with stocks on hand on Sept. 1 amounting to 34,067,000 tons, and loadings in the same period totaling 9,636,000.

Estimated consumption during September was approximately at the August rate, but based on a 30-day instead of a 31-day month, was slightly more than 6,500,000 tons, which means that about 3,000,000 tons of iron ore were added to stock during the month.

With a week's supply of ore, or about 2,000,000 tons in transit on the Lakes and by rail, stocks at furnaces and Lake Erie docks on Oct. 1, amounted to approximately 39,000,000 tons.

According to the Lake Superior Iron Ore Assn., September shipments were 9,636,353 gross tons, 8.6 pct under the September 1945 total of 10,543,099 tons. Cumulative shipments to Oct. 1 reached 43,259,634 tons, almost 30 pct under the 61,671,771 tons brought down in 1945 at the same date.

While the tonnage of ore that will be brought down from Oct. 1 to the end of the navigation season is admittedly anybody's guess, this observer pointed out that 14,043,000 tons were moved in the same period of 1945, which makes a movement of 15,000,000 tons before the close of the season this year a definite possibility.

Should this prove to be the case, about 55,000,000 tons of iron ore will be available for blast furnace operations during the winter, and if consumption hovers around 6,800,000 tons a month, or roughly the August figure during the winter, about 13,500,000 tons of iron ore would be on hand Apr.

1, 1947, a good two months' supply.

There is the possibility that 15,000,000 tons may not be brought down between Oct. 1, and the end of the season, thus the most optimistic estimate is a 60-day inventory on Apr. 1, which may pose a problem of distribution. It also follows that if navigation does not open up until May 1, only one month's supply of iron ore will be on hand.

Qualified observers agree that a 60-day supply on Apr. 1 is about the maximum, particularly if the Canadian steel industry bounces back rapidly after the strike and if the steel industry in the U. S. continues to operate at about 90 pct capacity. This might mean that there would be some few spots where available grades of iron ore might not be adequate. Added to this consideration is the shortage of scrap, a factor of prime importance.

Signs point to an iron ore movement of about 55,000,000 tons, plus, including rail, this year. But in the event 15,000,000 tons are brought down before the end of the season, the total may be close to the unofficial goal of 60,000,000 tons.

## Speeds Up Disposal Of War Surplus Property

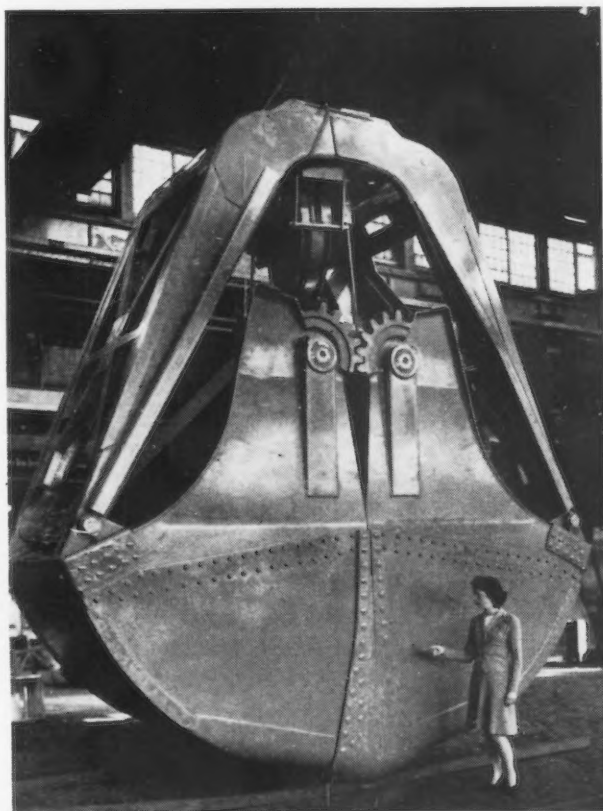
Washington

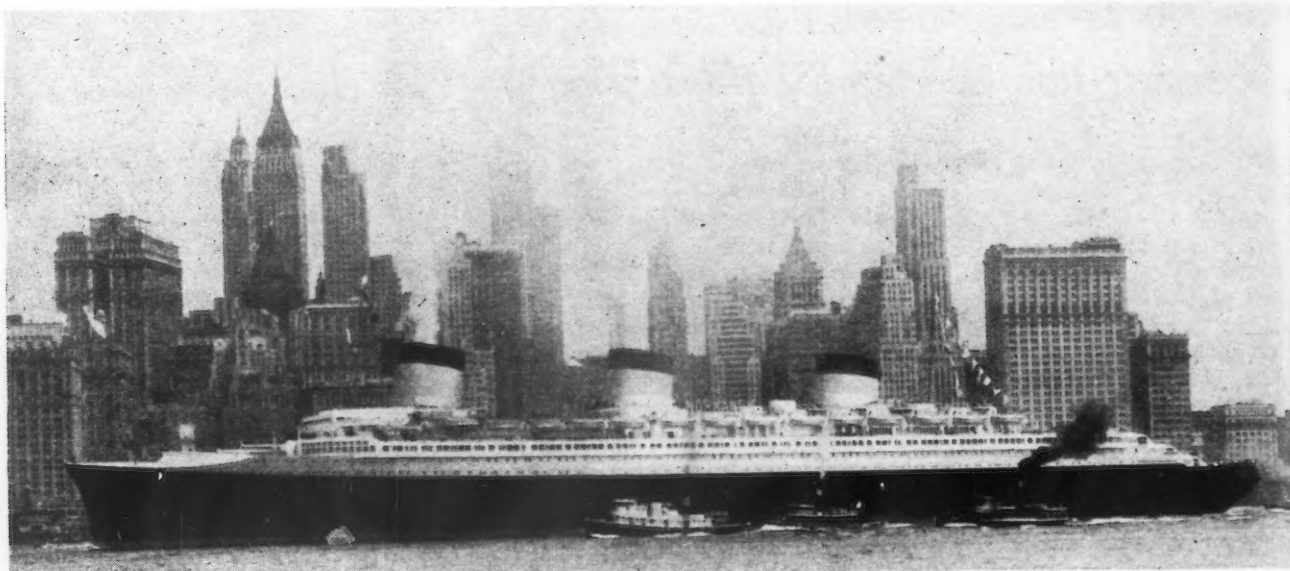
• • • Designed to speed disposal of war surplus property, WAA has issued instructions which permit its regional directors to call immediately for competitive bids after fixed price offerings have proved unsuccessful or inappropriate. WAA said that this plan removes bottlenecks and paperwork which have prevented regional directors from making the most efficient use of the competitive bid system in selling.

It was also announced that another speed-up in disposal has been provided by eliminating the need for holding up the entire sale of certain unusual property pending the making of an offering to meet priority requirements.

### BIG BUCKET:

Two of these buckets have just been built by Blaw-Knox Co. for a Lake Superior coal company to be used on a bridge-type crane to transfer coal from lake boats to dock storage. Believed to be among the largest clamshell buckets ever built, they are rated to handle 23 cu yd, or 17½ tons of coal. One grab will furnish the average home user with a two-year supply. Three bites will load a hopper car.





## Former Liner Normandie to Yield 40,000 Tons of Scrap

### New York

• • • Approximately 36,000 tons of steel scrap will be generated in the next year in breaking up the former luxury liner *Normandie*. Lipsett, Inc., the New York firm which will scrap the vessel has worked out a novel technique to avoid the tremendous beaching operation which many thought made the job too difficult to tackle.

Julius Lipsett, a member of the firm which was notified on Oct. 4 that its \$161,680 bid was accept-

able to the Maritime Commission, estimated that the former French liner would yield approximately 36,000 tons of heavy melting steel, 4000 tons of cast iron and about 1000 tons of nonferrous metals. Until the actual breaking up site has been selected the firm is not in a position to state whether they will cut most of the ship directly to prepared sizes or whether it will be mainly cut into shipping sizes and processed through dealers.

Much of the cast scrap in the

vessel will come from machinery while her piping is expected to yield the bulk of the nonferrous material. While the ship originally displaced more than 68,000 tons, her funnels, superstructure and "A" Deck were removed to permit a Navy salvage crew to right her after she capsized at her pier in February 1942. This explains why the weight of steel and other metals remaining is estimated at only 40,000 tons or so.

Shipbreaking experts have long wondered how it would be possible to beach the giant craft after she was cut down to the waterline. In fact, a West Coast group talked of purchasing the hulk for use in bulk storage of petroleum products. However, the Lipsett company has a plan to cut her into 12 floating sections, thereby reducing the beaching problem to a workable proposition.

Negotiations for acquisition of the breaking site have not been concluded but it is stated by Mr. Lipsett that it will be in the New York Harbor area, within 15 miles of the city. Once at the site the former Atlantic speed queen will be surrounded by barges and wood scaffolding will be built about her. As the cutting torches work their way down to the waterline Lipsett engineers will build bulkheads next to each of her present 11 transverse bulkheads. This cofferdam construction will permit divers to cut her longitudinal members between each of the

**STUCK IN THE MUD:** The \$60 million *Lafayette*, formerly the luxury liner *Normandie* caught fire on Feb. 9, 1942 and capsized at her Hudson River pier from the weight of water used in fighting the blaze. Here she lay until she was floated free with a 50° list on Aug. 8, 1943.





double bulkheads and allow the ship to be floated in 12 sections, none of which will exceed 100 ft in length. These bulkheads will be built of steel salvaged from the upper decks of the vessel.

The \$60,000,000 *Normandie*, once the pride of the French merchant marine, was taken over by the U.S. Navy early in the war and rechristened the *Lafayette*. In February of 1942 she caught fire at her New York pier and settled on her side into the mud of the Hudson River. The Navy took on the task of righting her because it was not even possible to cut the ship up for scrap at that location. At the cost of millions of dollars the Navy pumped 100,000 tons of water from her hull and she floated free in August, 1943.

The Vessel has been moored at a Todd Shipyards Corp. pier in Brooklyn since January 1944. Docking charges have amounted to more than \$13,000 per month, plus maintenance costs at the rate of \$60,000 per yr. The Lipsett company will move her within a month and put 150 men to work in the scrapping operation which it expects to complete within a year.

The comparative magnitude of the shipbreaking task ahead is indicated by the company's statement that it was able to demolish the New York 2nd Ave. elevated line in 8 weeks, yielding 30,000 tons of steel. The same firm has also demolished several other elevated rail lines in New York City and is now completing, with two other firms, the extraction of 8000 to 10,000 tons of structural scrap in a 24-block tenement razing program.

## Surplus Disposal Hits Record in Cleveland

Cleveland

• • • The Cleveland region of the War Assets Administration was among the highest of 33 U. S. regional areas during August in the race to dispose of a \$271,000,000 national stockpile of surplus automotive parts, O. E. Thomas, regional director here, reported.

In August orders for \$2,650,587 worth of surplus auto parts were written up by the WAA Automotive Div. in Cleveland, an eight-fold increase over June, when the intensified drive started.

## Arbitrary Delivered Steel Prices Advanced to Offset Freight Rate Rise

Washington

• • • Increase in delivered prices of iron and steel products at Toledo, Detroit and eastern Michigan, Mahoning Valley and the Gulf and Pacific Coast basing points have been announced by OPA. They are effective Oct. 9.

Intended to reflect the July 1 freight rate increases, the following increases may be added to delivered prices in the specified areas:

For ingots, blooms, billets, slabs and sheet bar, 50¢ per gross ton; for all other iron and steel products, 3.5¢ per 100 lb. Warehouses in the specified areas are permitted a dollar-and-cent pass-through of the mill increases.

In making the announcement, the price agency explained that for the most part the freight rate increases have been permitted to be

passed on to steel consumers since most shipments are priced under the regulation RPS-6, on an f.o.b. governing basing point basis.

However, before issuance of that regulation, it was customary for the industry to quote flat delivered prices for shipments into the areas covered by this action which were less than the total of the price at the nearest basing point plus transportation charges from such points. This practice was continued through the price freeze action.

The freight rate increase, however, made this action necessary to permit the increase to be passed on to the consumers in these areas to the same extent as under the basing point system. Otherwise, it was feared, shipments to important consuming industries in these areas might be reduced.

## OPA Raises Extras On Concrete Reinforcing Bars in Belated Move

Washington

• • • Belatedly recognizing losses incurred as far back as the fourth quarter of 1945 by producers of fabricated concrete reinforcing bars, OPA, on Oct. 9 upped ceiling prices on this product approximately \$2.50 per ton by increasing the permissible extras for bending and engineering.

The increases amounted to 15¢ per 100 lb for both light and heavy bending and 10¢ per 100 lb for engineering.

In addition, fabricators may charge published trucking rates when delivery is made entirely by truck. This change will free fabricators from absorbing a part of the excess costs formerly required when they shipped by truck.

The increases were granted after a study covering representative fabricators showed that during the fourth quarter of 1945, they had an average loss of \$1.20 per ton on the sale of fabricated reinforcing bars. Moreover since that time fabricators' costs have

increased substantially due to approved wage and salary increases. Other costs have increased such as social security contributions, insurance, supplies and scrap loss due to higher raw materials prices.

In addition, under this action sellers of concrete reinforcing bars may pass on increases in maximum arbitrary delivered prices being granted their suppliers at the same time. This will affect deliveries only in areas for which such ceiling prices are established and is necessary to keep shippers from avoiding shipments into those areas, OPA explained.

## Johnson Goes With CPA

Washington

• • • Robert E. Johnson, Director of CPA's Office of Economic Review and Analysis, has resigned from full-time government service and will serve with CPA on a consultant basis two days per week.

He has been on loan to the government by the Bell System for nearly 5 yr and has returned to New York to his position as economist with the American Telephone & Telegraph Co.

## Industrial Output In Pennsylvania Shows Steady Rise Since '39

Pittsburgh

••• A bulletin entitled "Industrial Expansion in Pennsylvania During the Second World War," prepared by Dr. George L. Leffler, professor of economics and issued by the Pennsylvania State College Bureau of Business Research, shows the relative changes in the importance of various industries in Pennsylvania brought about by the war.

Based upon industrial production in 12 major industries and in 67 counties and 20 industrial areas from 1939 to 1944, the bulletin points out that 1944 marked the peak of industrial production. After VJ-Day, production declined rapidly as reconversion to peacetime operation took place.

While the war in Europe started in September 1939, its effects were not observable in this country until 1940, and by 1941 a marked rise in production was evident. During 1942, 1943, and 1944 output expanded so that the overall picture for the State of Pennsylvania was as shown in the table below.

Production expanded from \$5¼ billion in 1939 to \$15 billion in 1944, with manufacturing showing the greatest relative and absolute gain. The metals and metals products production accounted for 47.9 pct of the total industrial output of the state in 1944, valued at \$7,209,236,000. Based on a 1939 index of 100, 1944 production in this category was 339. Next in order was food and kindred products valued at \$1,449,086,000; textiles and textile products, valued at \$1,385,683,000; and others as shown in the accompanying table.

Metals and metal products and miscellaneous products gained in relative importance during the war, while those industries that declined in importance included chemicals and allied products, clay, glass and stone products, food and kindred

products, leather and rubber goods, lumber and its remanufacture, mine and quarry products, paper and printing industries, railroad repair shops, textile products, and tobacco and its products.

Production expanded much more from 1939 to 1944 in metals and metal products and in miscellaneous products than in other classifications. Miscellaneous products include shipbuilding and airplane manufacture. Since steel, ships and planes were basic war products, it is readily understood why production in these industries showed greater expansion than other industries. The Pittsburgh area, comprising eight counties, accounted for about 29 pct of the manufacturing output in 1939 and 1944. Its share rose only nominally during the war period. Of the 20 leading areas, on the whole there were no great shifts in relative importance from 1939 to 1944.

## Approves 55,000 Tons Of Tinplate Exports To Southern Countries

Washington

••• Authority for licensing up to 55,000 short tons of tinplate for export to countries below the Equator to be shipped during the first quarter of 1947 has been granted to the Office of International Trade by CPA.

The advance licensing was permitted to insure enough tinplate for the food packing season in these countries and to minimize the impact of tinplate orders on mill schedules, according to M. L. Harvey, Director, CPA's Bureau of International Supply.

The OIT request was screened down by CPA from 68,000 short tons, which would have been 50 pct of the fourth quarter allocations to these countries, to a maximum of 55,000 tons.

This tonnage will be charged to the first quarter allocation of 1947 and shipped in that quarter.

## OWMR Takes Special Action to Get Pig Iron To New England Area

Washington

••• Emergency actions to maintain the flow of essential shipments of pig iron to the New England area over the next 2 months have been ordered by OWMR Director John R. Steelman it has been announced. Shipments into the area by outside producers have been sharply reduced because of high freight costs they were required to absorb.

Actions to be taken under the Steelman directive include amending of regulations by OPA so that outside pig iron producers will be guaranteed against losses on shipments to New England. At the same time CPA will take whatever action is necessary to maintain shipments to New England through October at the same levels which prevailed in recent months.

Before Dec. 1, Steelman said, it was expected to have the mystic furnace at Everett, Mass., in operation again. It has a capacity of approximately 176,000 tons.

The NHA is now working out an agreement with Republic Steel Corp. for rapid conversion of a plant at Troy, N. Y. from low phos to foundry and malleable grades of pig iron, Steelman revealed. Most of the Troy output is to be channeled to New England.

## ASTE Compelled To Call Off Convention

Detroit

••• In an unprecedented move, the 18,000-member American Society of Tool Engineers, largest technical organization of its kind, was forced, due to power, hotel and other strikes, to cancel its semi-annual convention, scheduled for Pittsburgh, Oct. 10-12.

Harry E. Conrad, executive secretary of the society said that telegrams calling off the meeting were being sent to all ASTE members. Mr. Conrad told the elected officers of ASTE that it was necessary to cancel the meeting because the greater part of Pittsburgh's industry was at a standstill and that the city was operating on about 25 pct of its normal electric power requirements.

Total Industrial Production, Pennsylvania, 1939 to 1944  
(Thousands of Dollars)

Year	Total Production Amount	Index	Manufacturing Amount	Index	Mines and Quarries Amount	Index
1939	\$ 5,705,465	100	\$ 5,322,944	100	\$382,521	100
1940	6,801,966	119	6,349,212	119	452,754	118
1941	9,553,642	167	8,985,604	169	568,038	148
1942	12,051,864	211	11,374,420	214	677,444	177
1943	14,021,794	246	13,263,392	249	758,402	198
1944	15,054,946	264	14,220,381	267	834,565	218



# Weekly Gallup Polls . . .

## Majority Names Foreign Policy No. 1 Campaign Issue

Princeton, N. J.

• • • Many candidates campaigning for Congress are skirting around or straddling the issues which the voting public considers the critical issues of this year's election, according to George Gallup, director, American Institute of Public Opinion.

While political leaders issue generalities and avowals of good intentions such as "peace and production," or "standing four square for progress," and "protection for labor," the voters of the country want to know specifically what is going to be done about these things.

(1) Just what the parties are going to do to see that this country does not get into another war, while its rights are at the same time protected.

(2) What the parties are going to do about the high cost of living and the food and clothing shortages.

(3) What is going to be done to curb strikes and regulate unions. Although the majority of voters have for years wanted an effective regulatory program, this is an issue which candidates of both parties will likely avoid.

(4) When and how the housing situation is going to be cleared up.

Political strategy as interpreted by politicians today usually dictates that the hot issues of an election campaign be avoided as much as possible, for fear that a courageous stand by a candidate may alienate some groups. But thousands of face-to-face interviews with voters in all the 48 states and in all occupations indicate that the above matters are among the problems uppermost in the mind of the electorate today.

Those issues are particularly vital for any candidate seeking to win over the independent voters—the people who do not consider themselves regular Democrats or regular Republicans.

A true cross-section of all voters—independents, Democrats and Republicans—were asked the following question:

"What do you personally regard as the most important issue which should be discussed in the coming November election campaigns?"

The replies show not only what is on the average voter's mind today, but how the public ranks those problems in importance:

(1) Foreign policy, relations with Russia.

(2) Lowering the cost of living.

(3) Curbing strikes and regulating labor troubles.

(4) Working out world peace, making the United Nations succeed.

(5) Housing.

(6) Shortages of food, clothing and other necessities.

(7) Veteran's welfare.

In addition voters mentioned balancing the budget and protecting the nation's credit, handling atomic energy, and miscellaneous issues.

It can be recorded that the independent voters (numbering about 13,000,000 out of the voting population of 65,000,000), the group holding the balance of power in elections look upon the issues in just the same order as the general voting public—foreign policy first, high cost of living second, strikes third, etc.

Voters who call themselves Democrats show more concern over the cost of living than Republicans. The voters who call themselves Republicans point to strikes and labor troubles as the top issue.

• • • Henry A. Wallace's recent critical remarks about Britain raise the question of whether the people in United States feel more friendly or less friendly toward Britain today than a year ago.

The truth is that the plain people in the United States have shown a marked cooling off toward Russia, our ally in World War II, and also some cooling off toward our other major European ally, Britain.

About six in ten say they feel less friendly toward Russia than they did a year ago when the war ended. Three in ten say they feel less friendly toward Britain than they did a year ago.

This is probably a natural post-war phenomenon, for the same trends can be found in Britain, when people are asked about their feelings toward United States and

### Public Feels Current Crop Of Candidates Avoid Main Problems Facing the Nation

o o o

the Soviet Union.

In measuring sentiment in the United States, the institute had field reporters in all parts of the nation ask a representative sample of voters this question:

"Are your feelings toward Britain more friendly or less friendly than they were a year ago?"

Americans Toward Britain	
	Pct
More friendly . . . . .	8
About the same . . . . .	53
Less friendly . . . . .	30
No opinion . . . . .	9

When the same question is asked about Russia, the replies add up as follows:

Americans Toward Russia	
	Pct
More friendly . . . . .	2
About the same . . . . .	28
Less friendly . . . . .	62
No opinion . . . . .	8

In Britain the same general cooling off was found when the same question was asked by the British Institute of Public Opinion of a cross-section of British voters:

British Toward Russia	
	Today Pct
More friendly . . . . .	8
About the same . . . . .	41
Less friendly . . . . .	41
No opinion . . . . .	10

British Toward U. S.	
	Pct
More friendly . . . . .	11
About the same . . . . .	51
Less friendly . . . . .	32
No opinion . . . . .	6

In addition the majority of American voters do not agree with Wallace's thesis that we should cut down on our military strength.

The public favors, on the average, a peacetime Army and Navy of 1,000,000 men each. That is what a coast-to-coast poll among a representative cross-section reveals.

Furthermore, more than three out of every four adults say they

(CONTINUED ON PAGE 168)

## CPA Scrap Advisory Committee Recommends Control of Inventories

Washington

• • • Establishment of inventory controls on dealers' and consumers' scrap in order to insure equitable distribution of the current short supply was recommended to CPA by its Iron and Steel Scrap Advisory Committee at its meeting on Oct. 3.

The recommendation was made in hope of speeding up the government's scrap drive. Edward Greb, CPA's salvage director, said that while scrap deliveries increased in July, an 11 pct gain in steel production during that month had reduced July stocks below the June level.

Reports on scrap consumption, Mr. Greb went on to say, show that with two or three exceptions, consumption is currently at a rate

higher than during wartime. Purchased scrap, he said, is being consumed at a rate of more than 2,000,000 tons a month.

The recommendation covered three main points: (a) that consumer (steel mills and foundries) combined stocks of purchased, home and unprepared scrap should be limited to certain consumption periods; (b) that scrap dealer shipments should be about equal to receipts except that dealers would have a 2-month period for preparation; and (c) a plan should be made which would speed low phosphorus deliveries to mills which manufacture high quality deep drawn steel sheets and other special quality products.

At the same time, OPA reaffirmed its stand that scrap prices would remain unchanged for 6 months. A Navy representative reported that additional naval and maritime vessels would soon be made available for scrapping.

## Shortage of Steel At Briggs Lays Off 7000

Detroit

• • • A steel shortage at Briggs Mfg. Co. has resulted in a drastic reduction in automobile body operations necessitating the layoff of approximately 7000 hourly and salaried employees.

In announcing the reduced operating rate Briggs disclosed that 12 of the nation's leading mills are Briggs suppliers, but deliveries of rolled steel needed for automobile body production have fallen off sharply.

A spokesman for Briggs said that steel deliveries to Briggs plants from VJ-Day to date have averaged 58.8 pct of the amount of steel the company received during the 1941 model year. According to steel suppliers, the backwash of the coal, steel and railroad strikes earlier this year, problems in converting the rolling mills from armor plate production, shortage of railroad equipment, the steel scrap shortage and governmental certification controls have all contributed to the present inability to meet steel requirements of Briggs.

Simultaneously it was announced by Norman Mathews, UAW (CIO) Chrysler director that Chrysler

Corp., which uses Briggs bodies, is reducing production from 3600 cars a day to 2300 because of a sheet steel shortage. Commencing this week, Dodge production will be reduced from 1038 to 630; Plymouth output, which is at approximately 2000 cars per day, will be set at approximately 950 units.

## Lifts Price Controls From Steel Castings Covered Under RPS 41

Washington

• • • Exemption from price control of all steel castings covered by the general steel castings and railroad specialties regulation (RPS 41), effective Oct. 4, has been announced by OPA.

At the same time, OPA exempted a number of military vehicles and used trucks. Military items were amphibian vehicles; artillery; automotive, electrical, instrument, machine shop, small arms and welding repair vehicles; command and radio cars; weapon carriers and reconnaissance vehicles except jeeps.

Used trucks exempted included only those with a manufacturer's minimum tonnage rating of three tons or more and those with the

## Carloadings Gain

Washington

• • • Shipments of iron and steel products during the fourth quarter of 1946 are estimated by the 13 regional shippers advisory boards at 526,020 carloads, a 3.3 pct increase over the 509,450 carloadings during the corresponding period of last year. Coal and coke carloadings are estimated at 2,685,823, an increase of 15.1 pct over the 2,333,729 carloadings during the 1945 fourth quarter. Reflecting a decrease of 8 pct, ore and concentrates shipments are estimated at 399,149 carloads compared with 433,758 during the final quarter of last year.

manufacturer's gross vehicle weight rating equivalent to a tonnage rating of 2½-3½ tons, 2½-4 tons, 2½-4½ tons, 2½-5 tons, and 2½-6 tons.

## Apollo Steel May Be Sold To Midwestern Group

Pittsburgh

• • • The approval of a proposal to sell the plant and inventories of Apollo Steel Co. for a sum greater than \$2,500,000 was given by the board of directors of Apollo, and stockholders of the company have been notified of a special meeting on Oct. 23 to consider the proposed transaction. Also, stockholders will consider the changing of the name of the company to Apollo Pittsburgh Corp., preliminary to its liquidation.

The purchaser of the plant and inventory is Irving Grayson, a Detroit lawyer, who is apparently representing monied interests not yet named. It is expected that active production and sales personnel will remain in charge of the plant.

New York

• • • According to reports in the trade, Irving Grayson represents a combine of fabricators from Detroit and Chicago which will take over Apollo Steel Co. officially on Jan. 1, 1947. Prior to that time, all obligations of Apollo will be fulfilled. Apollo has an allocation of 52,000 tons of sheet bar at the present time, and the new owners will take over 60 pct of this, leaving 40 pct on an allocation basis, it is reported. Apollo's offices will be kept open as usual, including sales.



## Steel Exporter Scouts Old Theory on Balance Of Exports v. Imports

Boston

• • • Contrary to popular belief, imports are more beneficial to the national economy than exports, George W. Wolf, president, U. S. Steel Export Co., told a group here recently. In a talk delivered before the management division of the American Society of Mechanical Engineers Mr. Wolf developed this thesis, tracing American business relations with the outside world for the past 75 yr.

"In the three quarters of a century preceding the last war, sweeping changes occurred in the picture of the business relations of the United States with the outside world," Mr. Wolf said. He continued:

"Prior to the depression of 1873, a persistent excess of imports characterized our merchandise trade, which was counterbalanced by heavy investments of foreigners. After the 1873 crisis, an excess of exports appeared, limited in the beginning but progressively swelling into rivers of American goods for export during the early 20's and late 30's.

"The character of our international trade also underwent striking change.

"Raw materials and foodstuff, which previously constituted the main classes of our contribution to the international movements of goods, were gradually replaced by semi-manufactured and manufactured articles. The importance of Europe as a recipient of our products rapidly declined, while the Americas, Asia, and to a lesser extent, Africa, imported more and more of our products.

"On the other side of the balance, our imports, which in the early days were principally composed of finished manufactures, progressively changed to crude materials and semi-manufactures. Europe lost its outstanding sales position and the Americas, Asia and again to a lesser extent Africa, emerged as important suppliers of our needs.

"But one factor in this picture must be recorded and wisely considered. The physical volume of our imports of foreign goods did not, over this same period, keep

pace with the rhythm of our expanding economy.

"The reason for this is not hard to discover—and though perfectly obvious has been completely overlooked, I am afraid, and has led to much fallacious thinking and heaped much abuse upon America for not wanting to buy, but rather, and only, to sell and sell and sell.

"Let us look at the facts.

"Taking the year 1938, a good representative prewar year, 85 percent of our imports by value were accounted for by only 100 items. 41 pct of our total imports, for a value of \$800 million were duty free. Items on which the duty was nominal, accounted for 32 pct of our imports for a value of \$618 million.

"Thus, 73 pct of our imports, again by value, in a normal year are not seriously affected by duty.

"So when we talk of increasing our importations by lowering tariffs, we are talking about approximately 30 pct of our total normal imports.

"To double our total imports, means increasing this 30 pct area 6-fold.

"We, as a nation, have succeeded willy nilly to world economic leadership. The method by which

we discharge this obligation will depend in no small measure upon our willingness to accept world leadership, especially in the spheres of international finance and service. Certain is one thing that we can not go on lending if we are not to be repaid. Unwise international loans enrich neither the one who gives nor the one who receives, and accelerates world misunderstandings that endanger world peace.

"Although loans of American money abroad may, at times, be essential to the overall world economy, including our own, they are not a substitute for domestic imports of services as well as goods as providers of dollars; often they delay the solution of problems instead of facilitating it.

"Contrary to a deeply-rooted common belief, not less erroneous for being of widespread acceptance, imports are more beneficial to the economy of a nation than exports.

"After all, the final purpose of organized industry and commerce is to place at the disposal of man the largest possible amount of needed and desired economic goods. This optimum level in the enjoyment of wealth can be attained solely through imports of foreign commodities and services.

"The prosperity of a nation is not measured by its accumulation of precious metals and currencies but by the essentialities and amenities of life available to its people. Exports are of importance inasmuch as they contribute to provide the means for the procurement of both.

"Despite wishful expectations, many of our foreign loans, outstanding and planned, may never be refunded, because of the inability of the borrowers to honor their obligations.

"It is worth considering if, in some cases, it would not be preferable to extend financial assistance by purchasing abroad a larger amount of commodities of which we could make tangible use, rather than by swelling the account of our receivable foreign assets; especially so when our national resources begin to dwindle.

"Some of the foregoing concepts have been consistently followed in our national policy of foreign trade; some others temporarily or permanently obscured."

**ORE CONVEYOR:** A conveyor belt, 1900 ft in length and manufactured by the B. F. Goodrich Co., is located in the Mesabi mountain pit of the Charleston Iron Mining Co. in Northern Minnesota. It handled 1,250,000 long tons of ore in the first year of operation. The belt is a 30 in., 8-ply synthetic cord construction with 1/4 in. top. Center to center distance is 947 ft, the total lift 272 ft, incline 35.53 pct grade, speed 578 ft per min and handles 550 tons per hr of wet or dry ore.



## Trade Association Acquires Control of French Steel Industry

### Paris

• • • Control of the French steel industry has reverted back to a trade association of the companies after a wartime siege under the control of a quasi-governmental body. Pursuant to a law passed last spring the steel board established under the Vichy regime passed out of existence on July 1, and an Iron & Steel Employer's Assn., roughly comparable to the British Iron & Steel Federation, took over the board's primary functions.

The official name of the new body is the "Chambre Syndicale de la Siderurgie," which was actually organized early this year in anticipation of the end of the Vichy group. Under the provisions of the April law the new group will exercise what direct control functions are necessary on prices, distribution, production and raw materials under present economic circumstances. The employer's federation in the case of the iron and steel industry will act on its own responsibility in these matters although according to a general program laid out by the government.

In addition, similar groups of re-rollers and alloy steel producers have been formed. All of the orders and restrictions previously in force are being maintained in an interim period until the details of the new system have been completely settled.

Other control boards have been or are being liquidated under the same order that affected the steel industry. They are as follows: From July 31, the coal import

board, the engineering board, and the aluminum and magnesium board; from August 31, the iron ore board; from September 15, the steel products sales board; and from September 30, the raw ores and metals board, and the machine tool board.

### French Firm Formed To Finance Rebuilding Of Damaged War Plants

#### Paris

• • • An iron and steel industry recovery and development finance company has recently been formed, to be known as the G.I.S., to assist in the financing of reconstruction and modernization and also to organize plants on behalf of several or all of the members.

The board of directors is composed of the following members:

M. O. Aubrun, president of the French Iron & Steel Federation (Chambre Syndicale de la Siderurgie),

M. Henry Goldberger, of de Wendel & Co.,

M. Marcel Rene Macaux, general manager of the Forges & Steelworks of Firminy,

M. Jacques Porche, of the Denain & Anzin Co.,

M. Francois Walckenaer, president and managing director of the Metallurgical Works of Normandy.

This is an important initial step in the impending modernization of the French industry, as the new corporation will be responsible for the construction and development

of new works. They will be drawing from German reparations, purchases in America, and as far as possible from material that can be found in France. Their responsibilities will include assisting the plants which received war damage, but on the whole this will be a relatively minor portion of the work.

Most interesting of the projects to be undertaken will be those coming under the category of "plants of common interest" which are described in the intentions of the new organization. Presumably these will include the new strip mills which are the favorite subject of conversation in the French industry. The Denain & Anzin firm, one of the sites proposed for the erection of the first of the two strip mills, is represented on the board by an engineer, while the de Wendel Co., whose mill in the east may be the other site chosen, is represented by M. Goldberger.

As there is no representative of the French Government in the finance corporation, it may be assumed that the steel industry will attempt to carry out the modernization program itself, but until more details are given on the "special organizations to be created," it is not certain that the government may not choose to participate in one form or another in the plants of common interest. The cost of the large undertaking contemplated may be so great as to exceed the resources of the companies involved, or their sociological implications may be so broad both from the standpoint of workers and consumers that the government may feel compelled to take a hand.

The creation of the finance corporation follows the recommendations of the French Ministry of National Economy and the Ministry of Industrial Production which invited various trade associations to establish mutual credit funds. The purpose of these funds would be to grant their members medium-term loans at low interest rates on condition that the funds shall be devoted exclusively to the purchase of equipment and machinery.

In other industries such funds have already been created for the purchase of French or foreign machine tools including the mechanical engineering industries, the tube and wire mills, the railway material, automobile and electrical construction industries.

**NOT A PACKARD:** Despite grille and other points of similarity to a U. S. car this is actually the Russian Zis-110, an 8-cylinder, 140-hp 7-passenger sedan of the type built for top Soviet officials. Its designers won one of the Stalin Prizes and manufacture of lighter models is said to be planned.





## General Increase Jumps French Steel Prices 36 Pct

### Paris

• • • General steel price increases for France have been announced which become effective retroactively to September 1, averaging about 40 pct for pig iron and about 36 pct for steel products. The steel industry considers the increases insufficient to cover the new costs after the recent wage increases ordered by the government.

Phosphorus foundry pig iron goes up from 2350 francs (\$19.75) to 3300 francs (\$27.23), hematite iron advances from 2640 francs (\$22.18) to 3700 francs (\$31.09) for steelmaking and from 2680 francs (\$22.52) to 3750 francs (\$31.50). The accompanying table lists the new schedule of ceiling prices for steel products, with their approximate dollar equivalents.

	Thomas steel	Openhearth
Rerolled products. 4875 f.	\$40.96	5387 f. \$45.26
Forging products. 5345	44.91	5821 48.91
Rails and accessories ....	7883 66.24	
Tires .....	6859 57.63	
Merchant bars .....	6400 53.78	7000 58.82
Wire rods .....	6447 62.57	8098 67.97
Plates .....	7883 65.40	8581 72.10
Medium sheets ..	8651 72.69	9383 78.84
Thin sheets ....	9592 80.60	10236 86.01
Galvanized sheet. 13958	117.21	
Black sheet.....	16,730 f.	\$140.58
Tinplate .....	22,147 f.	\$186.05

All prices are quoted per metric ton, and the production tax has not been included.

Production of iron and steel in France in August climbed another 2 pct to 75 pct of the 1938 average, slightly improving July's substantially increased level. French sources hint that the prospect of increased prices may have been a factor affecting this production record.

A concerted effort is being made to release additional supplies of coking coal to the iron and steel works, probably as a reply to indications that the French Government has been robbing the steel industry at the expense of other more favored industries. Reductions are being made in the allowances of coal to railroads and other industries of a quality that might be used by the steel industry, and efforts are also being made to increase the utilization of lower grade fuels and fuel oil wherever possible. The coal allocation for the French steel industry which

amounted to 500,000 metric tons in July, 540,000 in August, is expected to total 590,000 in September, and may be more than 600,000 tons in October. These increases should be reflected favorably in France's steel output.

The imports of English coal to France have been dwindling, and are expected to stop at the beginning of the winter owing to the critical fuel position in the United Kingdom, but increasing American imports are expected to at least offset this shortage.

Iron ore production reached a new high during July, the last month for which statistics are available. The total for the month

was 1,391,000 metric tons, and stocks at the end of the month remained high, totaling 7,330,000 metric tons. Exports increased to 491,000 tons in July, with about 75 pct of the shipments intended for Belgian and Luxemburg works. Eighty thousand tons were shipped to German mills of the Saar occupied by France, 18,000 tons went to Great Britain, and 12,000 tons to the Netherlands. The Ymuiden works in the Netherlands have relit a second blast furnace, and it is expected that some pig iron surplus will be available from it for export. A substantial increase in French pig iron prices is to be expected in the near future.

The importation of manpower is being seriously considered in France and will become essential if recent production increases continue. Important French mills which have depended on Belgian and Luxemburgian workers, known locally as frontalliers, who cross the border each day for their work, have been experiencing considerable difficulty, due to unfavorable rate of exchange for those workers. Since the adjustment of the franc a few months ago, the French Government allotted one special fund for the relief of these workmen, but is reluctant to continue this policy. Local strikes have resulted from the situation, but negotiations are under way, and the men have returned to their jobs.

Discussions have been under way between the French and Italian Governments for some time to arrange for the simultaneous Alleviations of the French labor shortage and the Italian unemployment problem, but it appears that the complementary situations, although existing side by side, are unbelievably difficult of solution.

Although no success has been achieved in the discussions, Italian workers are reported to be crossing the frontiers without the authorization of their government to work in France. A recent agreement has been signed between Great Britain and Italy for the supply of several thousand foundry workers after months of negotiations with British trade union officials.

### Italian Steel Prices

#### Rome

• • • The Italian Government has amended its price schedule for iron and steel products manufactured in the central and southern provinces of Italy. The prices per 100 kg are as follows, with their approximate dollar equivalents:

<b>PIG IRON:</b>	
Ordinary, for steelworks. £1300	\$5.77
<b>FOR FOUNDRIES:</b>	
Ordinary .....	1300 5.77
M.F. ....	1300 5.77
Hematite .....	1530 6.30
Special Montecatini, type ANS-N .....	1550 6.88
Special Cogne, types F1, F2, M1, M2 .....	1425 6.33
<b>REFINED AND DESULPHURIZED</b>	
Cogne, types A, B, MN, MC, S .....	1590 7.06
Montecatini, types 1, 2, 3, 4 .....	1590 7.06
<b>STEEL</b>	
Ingot AOO (homogeneous)	1580 7.02
Blooms and slabs, AOO (homogeneous) .....	1715 7.62
Billets, AOO (homogeneous)	2105 9.35
Hot-Rolled products .....	2740 12.17
Thick sheet iron (large size, wide plates) .....	3450 15.33
Thin sheet iron (black strip)	4260 18.93
Tubes and pipes (basis, gas tube 1 in.) .....	4640 20.62
<b>Rails:</b>	
Headed .....	3175 14.04
Grooved .....	3435 15.25
Rods .....	2970 13.20
<b>Products manufactured from rods (basis raw wire</b>	
No. 20) .....	3940 17.51
Cold-rolled hoop and strip.	5840 25.95
Wire products .....	4940 21.55

The prices stated are for delivery free on truck or rail, and do not include packing.

The above figures are converted to dollars at the official rate of 225 lire to the dollar. The black market rate hovers at nearer 700 lire to the dollar, and the real value may lie somewhere between.

## Canadian Steel Strike Ends After 81 Days; 100,000 Tons Ready to Move

### Toronto

• • • By a vote of more than 9 to 1 the strike that tied up Canada's basic steel mills for 81 days, came to an end on Thursday, Oct. 3. One immediate effect will be to release some 100,000 tons of steel produced during the strike at the Hamilton works of the Steel Co. of Canada. Returns of the secret ballot showed a total of 7169 workers in favor of returning to work; 789 against and 22 spoiled ballots. About 13,000 workers in the three plants were affected by the strike, and the comparatively light vote is credited to the fact that many employees on strike had taken temporary employment in other industries.

The arrangement under which the strike was settled is said to be a wage increase of 13¢ per hr; 10¢ retroactive to April 1, and the additional 3¢ per hr to go into effect when the men return to work. The union's original demand was for 19½¢, later scaled down to 15½¢.

The settlement of the strike af-

fords some immediate relief in steel supply due to the accumulation of upwards of 100,000 tons of steel at the Hamilton works of the Steel Co. of Canada Ltd., produced during the strike period. However, it will be several weeks before this company can return to full production schedules as at least two of its three blast furnaces will have to close down for relining and other necessary plant repairs, that had to be neglected during the war years and will have to be undertaken without further delay.

Insofar as Algoma Steel Corp., and Dominion Steel & Coal Co., are concerned, it is estimated that a month or 6 weeks will be required to put these plants in readiness for production as in addition to necessary repairs, equipment will have to be put in shape and furnaces lighted for production. Lack of semi-finished steel supply from the two latter companies also will hold down production at the Steel Co. of Canada, as in normal times Stelco

purchased between 10,000 and 20,000 tons a month from Algoma Steel and Dominion Steel for further processing.

While a complete list of the materials produced and stockpiled by the Steel Co. of Canada during the strike period is not available, it is stated that bars, rods, plate and skelp are included, but as all the sheet mill workers walked out on July 15, no production of sheets was possible. It has not been announced when the Selco Swansea works will resume operations. This plant closed down a week ago when it ran out of steel. However, the Montreal plant continues in production as it received some 9000 tons of steel by boat during the strike from the Hamilton works.

With the movement of steel again underway from the Hamilton works of Stelco, together with increased imports of steel from the United States and Great Britain, there should be some easing in the steel supply situation in Canada, although there is little prospect of supply and demand being equalized until about the end of next year. At the time the strike was called, July 15, Canadian steel producers reported books almost filled to the end of the year on production, and this was without taking a strike into consideration.

The strike, which cut off almost 3 months' production, has given a further setback to supply and producers unable to take care of old commitments are carrying big tonnage orders into the last quarter which will absorb all output to the end of the year and in some instances absorb production through the first quarter of 1947. Canadian steel producers are out of the market insofar as additional orders to the end of this year are concerned and on some materials first quarter production is taken care of.

### New French Disposal Firm Paris

• • • A special temporary French corporation has been established to handle surplus sales of machinery and industrial equipment received as reparations from Germany and other occupied territories. The sales are to be conducted through normal commercial channels as well as by auction, and the firm's business is expected to be completed in time to dissolve the organization within 3 yr.

### Coming Events

- Oct. 16-19 Electrochemical Society, fall congress, Toronto.
- Oct. 23-26 National Tool & Die Manufacturers Assn., convention, Chicago.
- Oct. 28 American Institute of Steel Construction, annual convention, Coronado, Calif.
- Oct. 28-30 American Gear Manufacturers Assn., semi-annual meeting, Chicago.
- Oct. 29-Nov. 1 Refrigerator Equipment Manufacturers Assn., exposition, Cleveland.
- Nov. 7-8 National Founders Assn., New York.
- Nov. 15-24 National Aircraft Show, first annual exposition, Cleveland.
- Nov. 17-22 American Welding Society, annual meeting, Atlantic City, N. J.
- Nov. 18-22 National Metal Congress and Exposition, Atlantic City, N. J.
- Dec. 2-4 Society of Automotive Engineers, air transport meeting, Chicago.
- Dec. 2-7 National Power Show, New York.
- Dec. 5-7 Electronic Microscope Society of America and American Society for X-ray & Electron Diffraction, joint meeting, Pittsburgh.
- Dec. 5-7 Electric Furnace Steel Committee of Iron & Steel Div., American Institute of Mining & Metallurgical Engineers, annual conference, Pittsburgh.
- Jan. 6-8 Institute of Scrap Iron & Steel, Inc., convention, New York.



# The London **ECONOMIST**

## Byrnes and Wallace

THE five-day wonder of Mr. Wallace's speech has been variously interpreted. Some see in it a subtle piece of party vote-catching — the Democratic party managers sending Mr. Wallace up to New York to convince the liberals of the big city that the party is still "progressive." It is not a very convincing theory; Mr. Wallace and the party managers have hardly been on speaking terms since the convention of 1944. And, in any case, the politics would have been a little too subtle, for the speech has placed Mr. Truman and the whole Democratic party in the most embarrassing position.

The poor President, who first blessed the speech and then un-blessed it, will be very lucky if he can paper over the cracks in his party without being compelled to choose between the departure of Mr. Wallace, taking with him the rump of the New Dealers, and that of Mr. Byrnes, who would take with him the whole conservative wing of the Democratic party and the whole prospect of cooperation in foreign policy with the Republicans.

It is much more likely that Mr. Wallace was being simple rather than subtle. He is the very self-conscious leader of the Roosevelt inheritance, the last hope of the New Dealers and virtually the only one of the original and genuine persuasion still in office in Washington. He feels keenly his responsibility towards a school of thought which has always been benevolent towards left-wing ideologies and therefore, by inevitable extension, towards Soviet Russia. Mr. Wallace's loyalty to this school of thought is probably stronger, in his own mind, than his loyalty towards his supplanter as Vice-President, whom fate has placed in the White House.

THE American liberals have been getting increasingly worried about Mr. Byrnes's foreign policy. Many of them are also Zionist Jews and hysterical in their

condemnation of British policy in Palestine. No doubt all these liberals "wha hae wi' Wallace bled" have been sending pathetic messages to him begging him to speak out—

Now's the day, and now's the hour;  
See the front o' battle lour!  
See approach proud England's  
power—

Chains and slaverie!

The anti-British sentences in the speech should not, perhaps, be taken too seriously. It has always been believed among the more innocent New Dealers that the bellicose and imperialist episodes in the Roosevelt record—they are not few in number—reflected the sinister ascendancy that Mr. Churchill exercised over his mind. (Mr. Elliott Roosevelt is busy proving it at the moment.) Moreover, if Russia is to be whitened, somebody must be blackened, and who better than the ghost of King George III?

THE British need not fear any sudden *volte face* in American policy. Mr. Wallace, for all his prestige, is a voice crying in the wilderness in the United States today. A victory for the liberal wing of the Democrats is impossible at the November polls. If the Republicans win, they will wish to be tougher, not less tough, with the Russians. The Republican Senator Vandenberg, symbol at Paris of the new "bi-partisan" approach to American diplomacy, certainly supports the Byrnes line.

And at less responsible levels the great majority of American newspapers and radio commentaries have been expressing and fanning the exasperation of American opinion with Russia's recent exploits in the international arena. Indeed, the looseness with which the word "war" has been thrown about in the United States in the last weeks was probably one of the factors which induced Mr. Wallace to make his speech.

There is something very comical about the theory that "British imperialism" is pushing America into

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o o o

hostility with Soviet Russia, when in fact there is growing anxiety in London over the persistence and precipitancy with which Mr. Byrnes is seeking occasions to challenge Russia. If anybody, at the moment, is driving anybody into hostility to Russia, it is the Americans who are driving the British. There is a striking contrast between the present scene and that of last winter, when Mr. Byrnes (the same Mr. Byrnes) seemed altogether too anxious, at the Moscow Conference in December, to agree with the Russians at Britain's expense, and when Mr. Bevin was given very lukewarm support against Russia's verbal aggressions at the Assembly and Security Council in January and February. The change since then is unquestionably a change for the better.

It ill befits those who have so often begged the Americans to have a positive policy—almost any positive policy—to complain when their prayers are answered. Nevertheless, very many people in this country are asking whether this is not a bit too much of a good thing. In general, it is a great advantage that the central problem of world affairs should no longer be represented—and misrepresented—as a simple struggle of power politics between Britain and Russia. After so painful a period of being the main butt of Russian attacks, the British Foreign Secretary must be very glad to take a back seat for a time. But have not the British echoes of American voices at Paris been perhaps a little too prompt and identical? When a British Socialist can be heard extolling the benefits of free private enterprise in Southeast Europe—and particularly when this happens so shortly

(CONTINUED ON PAGE 154)

## French Communists Seek Nationalization of Steel Industry

Paris

• • • The French Communist Party is making the first concerted effort to achieve the nationalization of the French iron and steel industry and has recently published a report intending to gain that result. The Communist plan proposes the nationalization of the iron ore mines, blast furnaces and steel works and kindred trades. But the main difference from cautious British proposals is that the Communist plan proposes the nationalization of five of the main companies without compensation to the owners, under the pretext of collaboration.

It is interesting to give some details of the Communist report on the French steel industry published in connection with the proposals:

France, says the report, has iron ore mines which are among the biggest of Europe. The known reserves amount to 7 billion tons, that is to say 35 pct of the European reserves which may be estimated at

By JACK R. HIGHT

European Editor

• • •

20 billion tons since the Soviet resources are better known.

The French reserves represent 14 pct of the world reserves known, which are estimated at 50 billion tons. As far as iron resources are concerned, France occupies third place after the U. S. which comes first with 20 billion tons, or 40 pct of the world resources, and the U.S.S.R. second with 9 billion tons, or 10 pct of the world resources.

The French iron ore resources are distributed as follows:

Lorraine .....	4830	million	metric	tons
Anjou .....	970	"	"	"
Normandy .....	800	"	"	"
Pyrénées .....	100	"	"	"
North Africa ...	300	"	"	"

The production of steel amounted to 6,174,000 tons in 1938, of which

90 pct was produced by 27 companies whose annual production is more than 50,000 tons each.

If two companies which have no blast furnaces, but produced in their steelworks 165,000 tons of steel (basse-Indre 65 000 tons and Escaut and Meuse 100,000 tons), are not taken into account, the French iron and steel companies may be analyzed as shown in accompanying table, according to the Communist report.

The 25 companies are bound closely together and affiliated with the main enterprises of the heavy industry, according to the Communist report. These main companies may be classified in three categories:

(1) The group of the two companies de Wendel, with 27 blast furnaces, representing about 16 pct of the French production. It is impossible to know its financial position as balance sheets are not published.

(2) The group of the works of the department of the Moselle grouping, the three big companies formed after the first World War to exploit the ex-German works. They have been taken over again by the Germans during the occupation of World War II, and no balance sheet has been published since 1939. This group owns 24 blast furnaces and represents in normal times 18 pct of the total production.

(3) The 20 other firms, the works of which are distributed in the North, in Lorraine, Normandy, and in the center of France, and in the Southeast, with 104 blast furnaces, represent two-thirds of the total production. The financial reports for 1943 for these firms indicate a rather good situation, says the report. The available assets represent 9250 million francs, exceeding the liabilities of 5665 million francs. The net assets representing the real value of the companies may be estimated at 8600 million francs.

As far as nationalization is concerned, the Communist Party pro-

	1938 Number of blast furnaces in blast	Production in thousands of tons	
		Pig iron	Steel
<b>De Wendel Group</b>			
Les Petits Fils de Wendel.....	8	690	744
De Wendel & Co. ....	4	282	210
	12	272	954
<b>Moselle Group</b>			
Société Lorraine des Acières de Rombas....	4	359	403
Société Métallurgique de Knutange.....	5	311	273
Union des Consommateurs de produits métallurgiques et industriels .....	6	447	489
	15	1,117	1,165
<b>Meurthe and Moselle Group</b>			
Acieries de Longwy .....	7	442	288
La Marine & Homecourt .....	9	352	342
Société des Terres Rouges .....	1	69	99
Société d'Aubrive & Villerupt .....	2	65	..
Société des Acieries de Micheville.....	4	244	230
Société de Senelle, Maubeuge .....	5	195	235
Société de la Providence .....	4	282	292
Société de la Chiers .....	4	210	189
Fonderies de Pont-a-Mousson .....	5	190	..
Société de Saulnes .....	2	108	..
Société de Pompey .....	3	192	180
Chatillon, Commentry, Neuves-Maisons.....	5	255	233
	51	2,604	2,081
<b>North Group</b>			
Acieries du Nord et Est .....	6	388	339
Société Denain & Anzin .....	3	281	342
Société de Paris Outreau .....	2	50	..
	11	719	681
<b>West Group</b>			
Métallurgique de Normandie .....	2	250	255
Société de Rouen .....	1	57	65
	3	307	320
<b>Center Group</b>			
Schneider & Co. ....	..	..	99
Société de Givors .....	2	59	..
	2	59	99
<b>Southeast Group</b>			
Société de Chasse .....	2	70	..



poses to separate the companies in three distinct groups:

(1) The works whose owners may be convicted of treason and the assets of which may be confiscated.

(2) The works from enemy citizens who had to give them up in 1918 and have taken them again in 1940. These assets must be taken over by France without compensation.

(3) Other works must be taken over and the owners compensated.

In consequence, says the report, the transfer to the state of the assets must be effected as follows:

(a) Confiscation of the assets of the firms de Wendel and of the three companies exploiting the Moselle works: Rombas, Knutange, and Union des Consommateurs de produits métallurgiques et industriels.

(b) Transfer to the state, with compensation, of the assets of the other 20 companies.

The report proposes that the iron and steel companies shall be regrouped, according to their geographical position, in four national steel companies, one for the east (Moselle and Meurthe & Moselle departments), one for the North (Nord & Pas de Calais departments), one for the West (Lower Seine, Calvados, Lower Loire, Maine and Loire departments), and one for the center and Southeast (Saône and Loire, Loire, Rhone, Isère departments).

For the firms whose assets will be transferred with compensation for the shareholders, compensation will be calculated according to the value of liquidation of the shares estimated on the last balance. However, this value must not exceed the average stock exchange value between Jan. 1 and Dec. 31, 1944.

French steel sources consider the report to be a purely political weapon at the present time, and do not attach a great deal of importance to the probabilities of it being carried out. The claims for confiscation of the de Wendel mills are based on allegations of collaborationism by the owners, which have never been ultimately established.

## French Government to Grant General Price Rise Covering Wage Costs

### Paris

• • • The French Government has recognized the inevitable and is granting general price increases to cover the costs of increased wages granted to labor. The original hope when the wage increases were granted in July was that prices would remain stable. Following wage increases that average about 21 pct, railway freight rates have gone up 35 pct, passenger fares by 15 pct, and milk, bread and meat prices have been increased substantially as the government has moved to eliminate subsidies. Gas, electricity and domestic coal prices are also being increased.

Wage scales for laborers have generally gone up a considerably higher pct than those for technical staffs, usually about 25 pct. The family allowances paid by the government to citizens with families

have been increased 100 pct, and grants given at the birth of children are also going up.

The Minister of National Economy has announced that industrial prices are to be readjusted in certain cases, including those for aluminum, imported metals and chemical products, but in the other firms the wage increases must be met by the employers, unless the employer can prove that wages represent too large a proportion of costs to permit.

For iron and steel products the government will continue its subsidy system for the present, but announces that the payments will end at the beginning of the year. In consequence an increase in iron and steel prices is to be expected in France at that time. The current French pig iron price quotation under the subsidy system is 2350 francs (about \$19.50) per ton.

## British Coal Exports Decrease; Production In Germany Increases

### London

• • • While Britain's coal exports to Europe during August, totaling 206,000 net tons, showed a decrease of 101,000 tons compared with July, there was a rise in production in western Germany, according to figures issued by the European Coal Organization. In western Germany in August there was a 5-week working period, in which 6,777,000 tons were produced, as against 5,358,000 tons for a 4-week working period in July, showing an increase of about 5000 tons in the average weekly output. In eastern Germany the August output represented 54 pct of the monthly average figures for 1935-38.

Production in France in August, amounting to 4,567,000 tons, showed an increase of 34,000 tons as against July, and was 7 pct more than the average monthly figures in 1935-38. Other coal output figures for August were: Belgium 2,013,000 tons (July 2,010,000); Netherlands 721,000 tons (889,000); Italy (Sardinia) 102,000 tons (102,000).

Underground output for each man shift in July in British mines was 1.48 ton, which was 89 pct of the 1935-38 figures. The figure was exceeded only in Poland (1.72 ton) and the Netherlands (1.72 ton).

## Czech Control Board Raises Metal Prices

### Prague

• • • The Czechoslovakian Supreme Price Control Office has increased the prices for metals as follows:

	Price per 100 kg.	Percent Increase on January 1946 prices
Antimony .....	\$59.40	39
Arsenic .....	182.18	27
Chromium .....	217.82	5
Cadmium .....	370.29	59
Manganese .....	77.24	23
Copper		
(electrolytic) ..	37.23	39
Lead .....	28.71	75
Zinc .....	24.75	35

The government justifies these increases by reference to the increased price of lead in the world market and the changed exchange value of the Canadian dollar. The only reduction is in the price of aluminum which has been lowered from \$33.96 in January 1946 to \$30.39, that is by 10 pct.



**ITALIAN TRUCKS:** At Turin, Italy, workers on the subassembly lines repair components to be used on the main line in assembling trucks at the Fiat Mirafiori plant.

## Rome

• • • One of the current perplexing problems which faces the Italian Government today is the decision as to the character of the postwar Italian steel industry. As

described in THE IRON AGE of Aug. 29, p. 76, the conflict is between the three modern integrated works of recent development as against the respective merits of the 80 odd small production units scattered

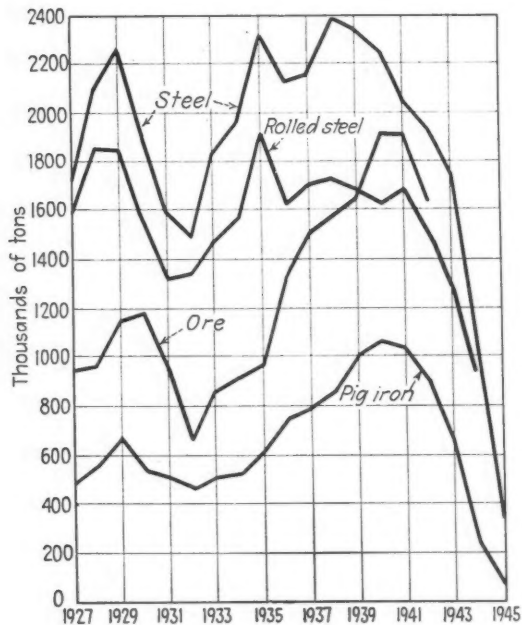
## Needs of Italian Steel

### Industry Include

### Greater Integration

over the country based on scrap consumption. Most of the support for the repair and reconstruction of the integrated units comes from official or semiofficial sources, while by and large the old line steel interests prefer to believe that the Italian future should more properly be tied up in small production units.

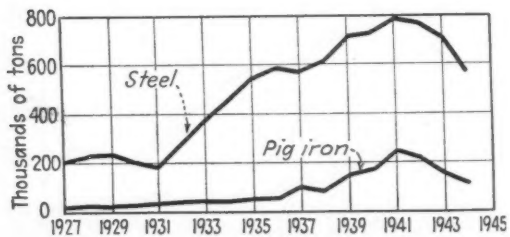
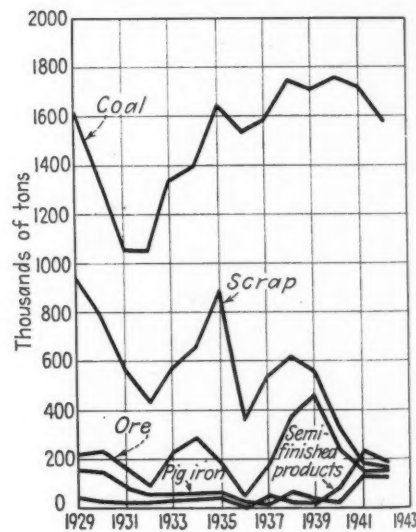
From the standpoint of those persons favoring a maximum of nationalization and the reconstruction of the large integrated plants located before the war at Naples,



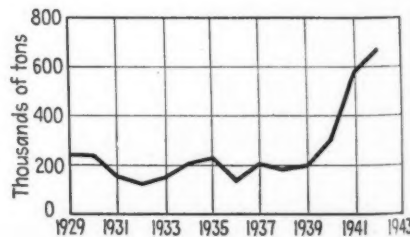
• Fig. 1—Italian output of steel, rolled products, iron ore and pig iron in thousands of metric tons, 1927-45. Upper left.

• Fig. 2—Italian electric furnace output in thousands of metric tons, 1927-45. Lower left.

• Fig. 3—Italian imports of raw materials and semifinished items for the steel industry in thousands of metric tons, 1929-42. Upper right.



• Fig. 4—Italy's imports of finished steel products in thousands of metric tons, 1920-41. Lower right.





Piombino, and Genoa, the position is crystal clear and the arguments are unanswerable. Italian iron and steel industry output reached a peak of 1.15 million short tons of pig iron in 1940, and 2.64 million short tons of crude steel in 1938 (fig. 1).

The output of domestic ore increased at about the same rate as pig iron production, almost meeting the requirements of home consumption. The important factor was the marked development of the electric steel industry, based exclusively on hydroelectric resources, which accounted for a production of about 250,000 metric tons of pig iron and about 800,000 metric tons of steel in 1941 (fig. 2). Both figures are about 38 pct of the respective total output during 1941.

The development of the electric steel industry is based mainly on the lack of local resources of coal (which increased the value of a certain seasonal abundance of electric power), on the trend to produce steel using the scrap process, and on the building of many minor steelworks. Hence, in specialized circumstances with respect to the location of sources of raw materials or of consumption markets it may be suitable to employ some electric furnaces in Italy, and also for the production of common steel in limited quantities,

and high quality or special pig iron.

The coal for the Italian iron and steel industry is entirely imported in proportion to the steel output,

### About the Author

Rome

• • • This article was written by a veteran Italian steel executive who prefers to remain anonymous. His views represent one half of the current dilemma facing the Italian industry. He is in favor of the reconstruction and development of a few integrated steel plants and the increasing of basic bessemer steel capacity. There is another and perhaps equally strong group in Italy which adheres to views varying widely from those expressed in this article. Their opinion is that small mills with a specialized range of products based primarily on scrap continues to be the answer to Italian steel needs.

—EUROPEAN EDITOR.

and between 1938-40 imports rated a maximum of 1,750,000 tons yearly. In 1929 and in 1935 scrap imports rose to nearly 900,000 tons; ore imports were low; those of pig iron and semifinished products were very limited. For a better understanding of the dependency of the Italian iron and steel industry on foreign supplies, fig. 3 illustrates the state of imports of the main raw materials.

Table I compares previous data, based on the average of the 10-yr period 1929-38. The ore produced comprised 40 pct pyrite ashes, residue of the preparation of sulfuric acid from pyrites. Italy is rich in these pyrites, and this is a supply on which she can rely in the future. In addition, the tonnage of imported coal for the production of pig iron and steel, for rolling and other heat treatments, is low. This is due to the following facts:

- (1) During the above 10-yr period 17 pct of the pig iron

• Fig. 5—Percent of openhearth charge (iron content of ore plus scrap) which is imported, compared with finished steel production in various countries, 1929-38. Note that scrap is included in the solid bar on the chart.

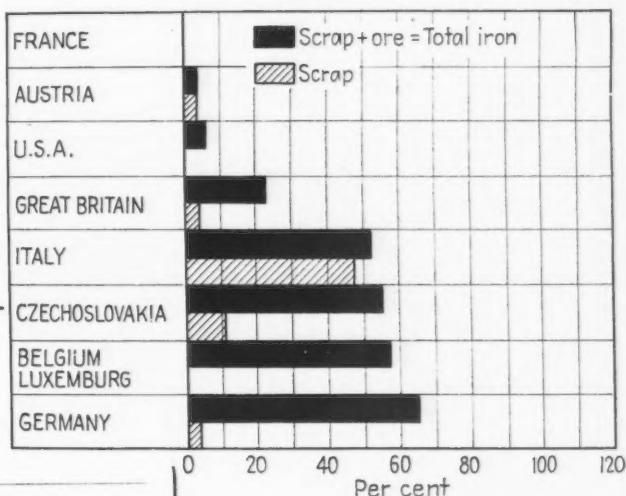


TABLE I

Comparison Between Italian Steel Production and Imports  
Yearly Average for the 10-Yr Period 1929-38  
(Thousands of metric tons)

PRODUCTION		IMPORTED COMMODITIES	
Iron ore, slag and iron sands.....	678	Coal.....	1436
Pyrite ashes.....	437	Scrap.....	640
<b>Total.....</b>	<b>1115</b>	Iron ore.....	202
Coke blast furnace pig iron.....	531	Pig iron.....	77
Electric furnace pig iron.....	92	Semifinished (c).....	31
<b>Total (a).....</b>	<b>623</b>	<b>Finished steel (c).....</b>	<b>188</b>
Basic openhearth steel.....	1383		
Electric furnace steel.....	489		
Bessemer steel.....	6		
Weld steel.....	128		
<b>Total (b).....</b>	<b>2006</b>		
Rolled steel.....	1600		

(a) Including 125,000 tons foundry pig iron.

(b) Including 57,000 tons steel castings. Approximately 20 pct of the total steel was produced by liquid charge.

(c) Crude steel corresponding to the imported semifinished and finished commodities, is estimated at 270,000 tons. Adding to this amount the crude steel corresponding to the imported mechanical commodities, i.e. 114,000 tons, the total crude steel is estimated at 384,000 tons.

and 25 pct of the steel output was produced by electric furnaces;

- (2) 10 pct of the steel output was manufactured and worked using lignite;
- (3) The steel was produced using new scrap equivalent to 70 pct of the finished products. This figure includes the scrap derived from imports, and domestic demolitions and collections, but not circulating and process scrap. This percentage was reached by the importation of 640,000 tons of scrap yearly, equivalent to

TABLE II  
Productive Capacity of the Italian Iron and Steel Industry

ITALIAN PRODUCTIVE CAPACITY IN 1942								
Methods of Production		Capacity Per Unit				Annual Capacity	Percentage of the Capacity of Plants on the Sea	Annual Capacity in 1946 <sup>1</sup>
Sections of the Industry	Number of Sections	Reference Unit	Per Unit		Average			
			Minimum	Maximum				
			(Tons)	(Tons)	(Tons)	(Tons)		(Tons)
Coke blast furnaces.....	15	day	225	750	380	1,500,000	90	410,000
Closed electric furnaces.....	19	day	20	100	80	240,000		180,670
Open electric furnaces.....	24	day	12	60	27	110,000 <sup>2</sup>	12	90,000 <sup>2</sup>
Total pig iron.....						1,850,000	74	680,000
Converters.....	10	charge	9	30	24	1,200,000	90	130,000 <sup>3</sup>
Basic openhearth furnaces.....	95	charge	15	60	40	2,300,000	30	1,900,000
Electric furnaces.....	151	charge	1	30	10	1,100,000	7	970,000
Total steel.....						4,600,000	25	3,000,000
Blooming mills.....	12	hour	20	100	40	1,940,000	60	1,540,000
Rolling mills 600 mm.....	12	hour	10	27	19	916,000		888,000
Rolling mills 400 to 600 mm.....	24	hour	4	15	8.7	838,000		788,000
Rolling mills 400 mm.....	72	hour	3	12	5.3	1,520,000		1,424,000
Plate mills.....	11	hour	3	12	7.3	365,000		328,000
Sheet mills.....	82	hour	0.5	3	1.2	380,000		300,000
Tube mills.....	13	hour	2	7	3.6	173,000		172,000
Tire mills.....	2	hour			5	60,000		80,000
Total rolling mills.....						4,250,000	40	3,980,000

<sup>1</sup> Including the small repairs of war damages.  
<sup>2</sup> These figures are not definite as the open electric furnaces for pig iron can be used also for ferroalloys.  
<sup>3</sup> Excluding the capacity of the basic bessemer steelworks at Bagnoli, which is slightly damaged but lacking an adequate blast furnace.  
N.B. The annual capacity of the rolling mills was computed in respect to half of the workable hours.

44 pct of the finished production.

The percentage of scrap and of total iron (iron content of ore plus scrap) imported from various industrial countries, in respect to finished production is indicated in fig. 5. It is also evident that the iron imports of Czechoslovakia, Belgium, Luxemburg and Germany exceeded those in Italy. However, whereas those countries imported mainly iron ore, Italy imported mainly scrap. Italy exceeds all other countries in the adoption of the scrap process in its industry, as indicated in fig. 6.

From 1934 until the beginning of the recent war an attempt was made in Italy to further develop the iron ore process by means of modernization and the construction of some fully integrated plants. Thus it was hoped that Italy's steel industry would succeed in attaining low cost mass production of steel as well as high quality electric steel production. It was planned that the best openhearth steel plants based on scrap should concentrate only on the limited common or specialized commodities, or those which due to the particular location or manufacturing condi-

tions are economically convenient. The working of mass semifinished products would be produced by the most efficient rerolling mills, not connected with the steelworks.

Although nearly completed, this program was not realized due to the destruction wrought in the fully integrated plants during the war, so that at present Italy still depends largely on the scrap process.

From the analysis in table II it is evident that the average capacity of output per unit in Italy is much lower than in the United States, for coke blast furnaces

(380 tons average daily), for openhearth furnaces (40 tons average capacity), and generally for all the rolling mills as is the case in most of Europe. This is partially due to the existence of very small production units of a specialized nature which characterized the Italian iron and steel industry in the past (see table III). The same cause delayed the construction of large integrated plants as well as the continuous and semicontinuous systems of rolling, or at least more mechanized systems.

The main factors which have brought about the establishment of minor steelworks located in various regions are the small scale home consumption, and the lack of a general and efficient coordination.

Table IV summarizes the different distribution of specific steel commodities in Italy and in the United States. The variations are a result of the different economic conditions in the two countries and also to the previously mentioned departmentalizing of steel production.

Italian consumption of crude steel during the period 1929-38 amounted to 2,390,000 tons, com-

TABLE III  
Organization of the Italian Iron and Steel Industry in 1942

	No. of Plants
Integrated plants.....	5
Plants with steelworks and rolling mills.....	48
Plants with rolling mills only.....	7
Plants with steelworks (foundry) only.....	25
Plants for pig iron production only.....	4
Total number of plants.....	89
Companies.....	70



prising 2,006,000 tons of steel produced in Italy and 384,000 tons of crude steel which corresponds to the imports of semifinished and finished commodities (see table I). This consumption should increase, both because it is lower than in other countries (fig. 7 shows a very low per capita output for the Italian people), and for the necessity of reconstruction as a result of enormous war damages. Table II represents pig iron and steel capacity in 1946. Considering the state of the Italian steel industry in 1946, it is imperative to restore the productive capacity of the blast furnaces in order to attain a better equilibrium in the usage of pig iron in relation to scrap. It is also advisable to restore, at least in part, the capacity of the converters to produce a certain amount of Thomas steel destined for products which do not require openhearth furnace steel. This represents a considerable advantage for Italy, as Thomas steel is the most economical, utilizing phosphatic iron ore which is easily available in Sardinia and in the Mediterranean basin. In addition phosphoric slag recovered from the ore would considerably reduce imports of fertilizer phosphates.

In order to boost pig iron output, more substantial ore imports are needed to supplement domestic sources of ore and pyrite ashes.

The geographical position of Italy in the Mediterranean basin, as shown in the appended map, is advantageous in regard to the location of the most important ore mines. Table V illustrates the

TABLE IV  
Distribution of the Production of Steel Commodities in U. S. A. and Italy

Pct of flat-rolled products to total rolled steel <sup>1</sup>			Pct distribution of the production of steel commodities in 1936		
YEAR	U. S. A. pct	ITALY pct	STEEL COMMODITIES	U. S. A. pct	ITALY pct
1922-26	41.7	.....	Rails.....	4.1	4.3
1927	41.2	.....	Tubes and band for tubes.....	9.1	7.1
1928	39.7	.....	Rods.....	7.3	8.9
1929	40.3	17.5	Bars, sections, and others.....	29.1	54.0
1930	40.2	17.5	Plates.....	8.1	11.3 <sup>1</sup>
1931	39.9	18.0	Sheets.....	23.7	9.6
1932	45.1	18.0	Tinplate.....	7.7	4.8
1933	48.7	19.0	Strips <sup>2</sup> .....	10.9	.....
1934	45.6	20.8	Total rolled steel.....	100.0	100.0
1935	47.8	22.1	Total flats.....	50.4	25.7
1936	45.9	25.7			
1937	46.5	23.7			
1938	47.4	26.8			
1939	47.4	28.4			

<sup>1</sup> Including universal steel.

<sup>2</sup> Strip is considered in the U.S.A. only the commodity sold as such.

main characteristics of these ore mines.

The distances between the Mediterranean mines and nearly all the Italian blast furnaces are shorter than for most other countries. The coal haulage, which is longer than for iron ore, does not excessively burden the prime costs owing to the high selling price of byproducts and to the favorable location of the plants on coastal sites.

The rationalization of the iron and steel industry in accordance with plans now projected would place Italy in a position to exploit its close proximity to the Mediterranean sources of supply and by expanding its present limited exports of steel aid in balancing Italian import requirements.

Today's iron and steel industry

in Italy originated shortly before 1900, when the first basic openhearth furnaces for the production of steel by means of the scrap process were set up. Between the period 1900-10 blast furnaces were established in Italy. However, for various reasons these plants had not become fully integrated and lacked the resultant advantages gained through full integration.

After 1910 further development of the Italian steel industry was toward small steelworks, using the scrap process. The low prices for steel products in Italy created by the foreign dumpings of steel on the markets enhanced the impression that the Italian steel industry could exist only by the scrap process. Attempts were made by some groups during the years preceding

• Fig. 6—Percent of the total iron content of the openhearth charge compared with finished production in the various steel making countries, 1929-38, left.

• Fig. 7—Per capita iron output in kilograms in various steelmaking countries in 1938, below.

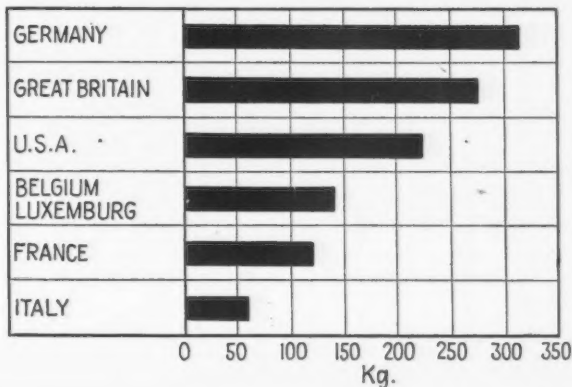
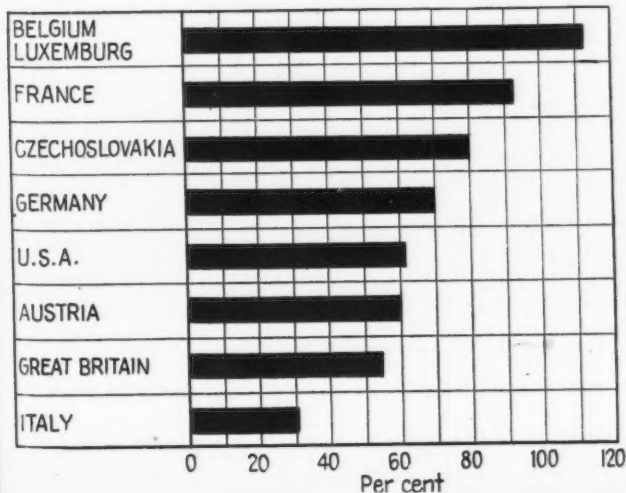


TABLE V

Italian Ore Mines and the Chief Ore Mines in the Mediterranean Basin

Location	Present Means of Transportation	Distance from the Sea Km.	Embarkation Ports	Mining System	Productive Capacity in 1942 (tons)	Estimated Iron Ore Reserves in 1942 (tons)	Average Analysis of Iron Ores <sup>1</sup>				
							Fe, pct	Mn, pct	P, pct	S, pct	SiO <sub>2</sub> , pct
ITALY:											
Cogne (in the Alps)	Railway	240		underground	300,000	14,000,000	56-60	0.5	0.04	0.04	1-3
Elba	Joined with landing-stages	2	Elba	open pit	400,000	12,000,000	45-60		0.05	0.15	3-15
Nurra (Sardinia)	Joined with landing-stages	20	P. Torres	mixed	120,000	4,000,000	43-48	0.7	0.80	0.23	5-15
Various <sup>2</sup>		various		mixed	430,000	5,000,000	41-54	0.4-6		0.30	1-3
Total					1,250,000	35,000,000					
TUNISIA:											
Djerissa	Railway	180	Tunis	mixed	700,000	15,000,000	55	2	0.02	0.02	2
Slata <sup>3</sup>	Railway	236	Tunis		50,000	2,000,000	55	4	0.01	0.05	4
Ououara	Railway	85	Biserta	open pit	200,000	3,000,000	57		0.04		8
Hameina	10 km. from railway	240	Tunis	mixed	inactive	5,000,000	56	2	0.02	0.08	1
Dj Ank	25 km. from railway	65	Sfax	mixed	250,000	20,000,000	53*	1.50	0.85	0.20	5
Total					1,200,000	45,000,000					
ALGERIA:											
Ouenza	Railway	200	Bona	open pit	1,600,000	85,000,000	55	2	0.01	0.01	2
Bou Kadra	11 km. from railway	230	Bona	open pit	400,000	20,000,000	55	2		0.03	4
Ain Babouch	50 km. from railway	320	Bona	mixed	inactive	10,000,000	54	1	0.85		5
Khanguet el Mouhad	6 km. from railway	250	Bona		200,000	5,000,000	52	2.75		0.03	5
Various <sup>4</sup>	Various	various	various	mixed	600,000	35,000,000	49-65	0.6	0-0.8	0-0.1	3
Total					4,000,000	200,000,000					
SPANISH MOROCCO:											
Melilla	Railway	15	Melilla	open pit	1,300,000	40,000,000	63	0.15	0.04	0.17	5
MEDITERRANEAN SPAIN:											
Alquife	Railway	100	Almeria	mixed	400,000	40,000,000	52	2	tr.	tr.	5
Ojos Negros <sup>5</sup>	Railway	250	Sagunto	open pit	600,000	20,000,000	54	1	0.03	0.05	6
Total					1,000,000	60,000,000					
YUGOSLAVIA:											
Prijedor	Railway	300	Susah-Sebenico	mixed	400,000	300,000,000	51	2		tr.	6
Vares	Railway	240	Netkovis	mixed	250,000	120,000,000	45	2			9
Total					650,000	420,000,000					

<sup>1</sup> The analyses of Italian iron ore mines refer to ordinary iron ores, whereas foreign ore mines refer to high grade iron ores destined for export.

<sup>2</sup> Traversella, Valli Lombarde, Valdaspra, Apuania, Campigliese, Sardegna, etc.

<sup>3</sup> Containing 0.64 pct As.

<sup>4</sup> Includes the ore mines situated along the coast west of Bona.

<sup>5</sup> As the Ojos Negros ore mines are comprised in the network of the Sagunto blast furnaces, this ore is not available for export.

the first World War to change the small unit trend of the steel industry, but they remained fruitless.

During this period the increased development of hydroelectric power in northern Italy encouraged the adoption of electric furnaces for the production of steel. Favorable rates for the hydroelectric power gave the Italian steelworks an advantage over foreign production in this respect.

During the period immediately following the first World War, the

increases in freight rates for iron ore and coal further swung steel production away from the integrated plants toward the smaller plants using the scrap process. At that time war scrap flooded all the markets and partially through the efforts of existing steel cartel in Italy the prices for scrap were reduced up to one fourth of the cost of pig iron.

The continued establishment of smaller and medium plants using solid charge was further justified

by their being located near consumption centers and by the relatively small capitalization required. This policy renounced the economic advantages of the larger integrated works as well as the economic advantages of large quantity production. Single plants were designed and built to produce a wide product range instead of specializing in quantity production of a few items.

The return of more normal steel producing conditions a few years after the first World War favored once more the expansion of the coke blast furnaces and simultaneously accelerated the development of high capacity electric pig iron furnaces.

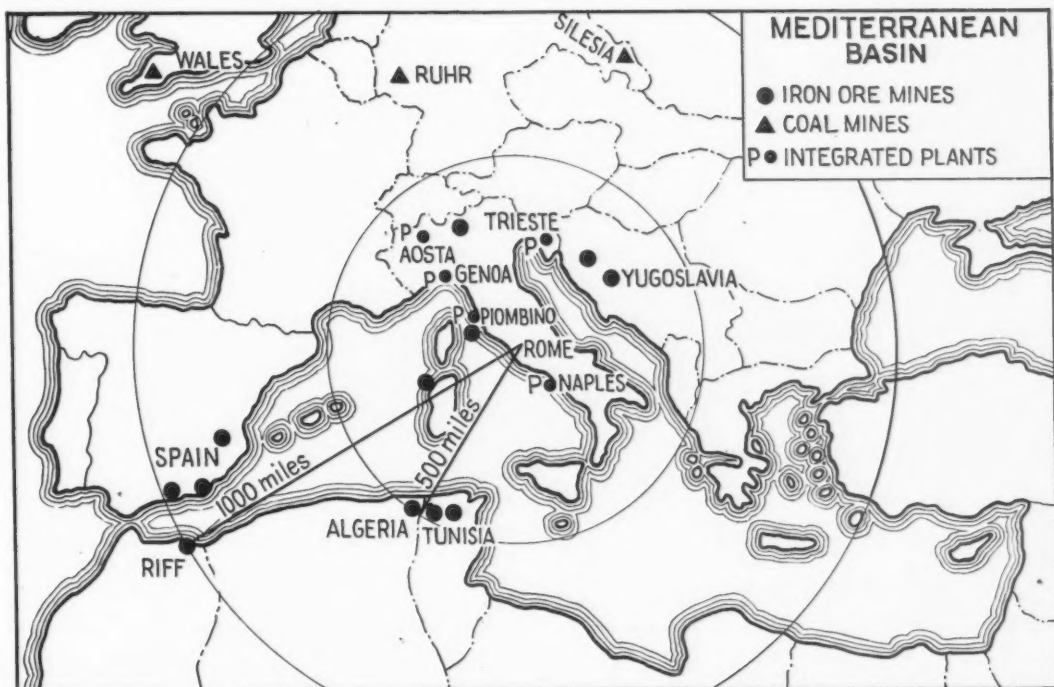
After 1932 a study was made, aimed towards developing the Italian steel industry along the lines of fully integrated plants as were currently being used in other countries. The results of this study during successive years fostered the development of a mass production steel industry, with the

TABLE VI  
Cost of Coke Production  
(In Italian lire)

Cockerill		Bagnoli	
Coal (1,400 kg at 44 lire each)	61.60	(1,350 kg at 57.70 each)	77.90
Manufacture	13.20		10.50
Total	74.80		88.40
Recoveries (exclusive of gas):			
Byproducts	9.30		17.00
Total cost of coke per metric ton	65.50		71.40



•Fig. 8—The main Mediterranean iron ore mines, European coal mines and the Italian integrated plants situated on the sea.



result that the main large plants were partially modernized and one new completely modern plant was built. These plants suffered heavy damage in World War II. In 1942 the Italian steel industry, with the exception of the numerous electric furnaces for ferroalloys, was made up as follows:

- 15 coke blast furnaces
- 43 closed and open electric furnaces for pig iron
- 11 converters
- 95 basic openhearth furnaces
- 150 electric furnaces for steel
- 125 rolling mills for steel sections and plates
- 82 housings for rolling sheets and tinplates.

This equipment was distributed among 90 steelworks, of which five were fully integrated and 25 produced only steel castings.

In order to prove the worth of integrated Italian plants in the world market, a comparative study was made of the factors involved in 1934 that guided the official steel policy through its next years. A cost analysis was developed comparing the Italian and Belgian production costs in 1934. Italian steelmakers in 1934 were certain that the scrap process was more economical than the fully integrated process.

Since the production costs of French, British and German steel products were higher than those of Belgium, this comparison was

considered the ultimate test in world competition. To make this comparison, one of the leading and most representative firms in each country was picked. These were the Ilva Bagnoli steelworks in Italy and the Cockerill steelworks in Belgium.

In the comparison the cost of coal in Italy was figured exclusive of customs duties which do not exist in Belgium, and the comparison was made between the production of basic bessemer pig iron at Cockerill and the production of openhearth pig iron at Bagnoli, as they were the respective types for usual production in the two steelworks.

Cockerill produced openhearth pig iron in limited quantities for special jobs. Analysis of the cost of this production was not included in the above tables as the de-

tails were not known. Nevertheless the total cost was known to be 176 lire per ton, which was 22 lire higher than the Italian cost for the same type of pig. This cost analysis shows that Bagnoli's production of openhearth pig was slightly more costly than Cockerill's production of basic bessemer pig, but was considerably cheaper than Cockerill's production of openhearth pig.

One reason for this was that Bagnoli selected quality coals from two or three sources and blended these coals in such a manner that the quantity consumed per ton of pig iron was low, while Cockerill was forced to use local low grade coals and so the quantity consumed per ton of pig iron was high; another reason was that

(CONTINUED ON PAGE 160)

TABLE VII

Cost of Pig Iron Production—(In Italian lire)

Cockerill		Bagnoli	
Iron Ore—94 units at 0.71 L.	66.75	98 units at 0.90 L.	88.20
Scrap—3 units at 1.00 L.	3.00		
Manganese—1 unit at 1.65 L.	1.65	2 units at 2.00 L.	4.00
Limestone.		0.850 at 71.40 L.	5.40
Coke (metric tons)—0.920 at 65.60 L.	60.30		60.70
	131.70		158.30
Manufacture.	39.00		33.60
Recoveries:			
Gas (including blast furnace gas).	20.00		35.00
Slag, etc.	1.20		3.00
	21.20		38.00
	21.20		38.00
Total cost of basic bessemer pig iron per metric ton.	149.50	Total cost of openhearth pig iron per metric ton.	153.90

## Industrial Briefs...

• **BUYS RAILROAD LAND**—The Worth Steel Co. has recently purchased from the Pennsylvania Railroad three tracts of land containing more than 50 acres which join its property at Claymont, Del. With the acquisition of this property, the steel company now owns more than 640 acres at Claymont. One hundred sixty acres lie between the Pennsylvania Railroad and the Delaware River.

• **MATHEWS EXPANDS**—F. E. Moore, president, Mathews Conveyor Co., Ellwood City, Pa., has announced that a new sales policy for its subsidiary, Mathews Conveyor Co. West Coast, becomes effective Oct. 31, 1946. At that time, the working agreement which the Mathews Conveyor Co. has had with Mailler Searles, Inc., will terminate, and all sales of Mathews Conveyers in the Pacific States and Hawaiian Islands will be handled by the sales organization of Mathews Conveyor Co. West Coast rather than through Mailler Searles.

In making this announcement, Mr. Moore stated that this new sales policy and the greatly expanded production facilities will make available to Pacific Coast industry a highly efficient, complete conveyor service.

• **NEW STEEL FIRM**—Announcement has been made of the partnership formation of Rafferty Bros. Co. by Thomas J. Rafferty and Paul J. Rafferty. This company will warehouse steel sheet, strip, coil and flat wire. Office and warehouse are located at 100 Grove St., Worcester 5.

• **IMPROVES SERVICE**—Electro-Motive Div. of General Motors Corp. has announced establishment of a chain of branch locomotive repair shops wherein the advantages of use of original factory machinery and methods plus the economies of quantity production will be brought closer to railroad customers. One of these shops has been in operation at Emeryville, Calif.

Two others are under construction at Jacksonville, Fla., and Baltimore, Md. A fourth is the service repair shop section of the main plant at LaGrange, Ill. Electro-Motive has also established a new regional field service organization with headquarters in St. Louis to bring control of service and parts closer to railroads operating General Motors diesel locomotives.

• **AFA ELECTION**—R. G. McELWEE, manager, iron foundry division, Vanadium Corp. of America, Detroit, will continue as chairman of the 1946-47 cupola research committee of the gray iron division of the American Foundrymen's Assn. A. E. Schuh, director of research, U. S. Pipe & Foundry Co., Burlington, N. J., is vice chairman, and E. H. Stilwell, chief metallurgist of the Chrysler Corp.'s Dodge Div., Detroit, has been named secretary. Other members of the new committee are A. L. Boegehold, chief, metallurgical department, General Motors Research Laboratory, Detroit; H. Bornstein, director of testing and research laboratories, Deere & Co., Moline, Ill.; and E. C. Jeter, foundry metallurgist, Ford Motor Co., Dearborn, Mich. The new committee will delineate and recommend cupola research projects.

• **CAR SHOP CHANGES**—Chesapeake & Ohio Railway Co. has authorized expenditure of \$834,000 for additional machinery installations in its car shops at Russell, Ky. Machinery will be used for fabricating the steel to be used in repairing approximately 3000 cars annually. The equipment will consist of shears, punching machines, forging machines, furnace, presses, lift trucks and related machinery.

• **CPA GREEN LIGHT**—A. M. Byers Co., Pittsburgh, has been granted permission to spend \$103,500 for the construction of a building to manufacture pipe at Economy, Pa., it was announced by CPA.

## London Bank Syndicate Grants Large Credit

Paris

• • • A London bank syndicate headed by Hambros Bank has granted a credit of \$4 million to a new company created in Paris which is said to have the support of the Bank of France as well as several others including the "Union Europeenne Industrielle et Financiere" which was before the war the holding company of the Schneider interests with ramifications in Poland, Czechoslovakia, and other central European countries.

The purpose of the new organization is said to arrange credits in foreign banking centers to enable French firms to import raw materials for processing and subsequent export. Similar arrangements were concluded by Hambros Bank with a Czech organization early this year primarily for the assistance of the Czech steel industry, and additional British funds are expected to be offered to a Swiss group along the same lines.

## To Go Into Partnership With Chinese Capital

London

• • • In confirmation with the present trend in China, British industrialists are entering into partnerships with Chinese capital in their enterprises in that country. Present indications are that the former managers will retain their positions in the new firms as the Chinese are endeavoring to make the best possible use of executive experience.

As a result of such an amalgamation the British Austin Automobile company has seen its Chinese agents, Auto Palace Co. Ltd., of Shanghai combine with the Chinese Yangtze Development Co. for future distribution.

## OPA Grants Price Rise

Washington

• • • Manufacturers of coil and flat bedsprings and metal beds have been granted a reconversion ceiling price increase of 6 pct by OPA, effective Oct. 7, to compensate for labor and material cost increases incurred since October 1941 and not reflected in previous increases.



## Construction Steel

### New York

#### • • • Fabricated steel awards this week included the following:

- 2000 Tons, Warren, Pa., generating station for Pennsylvania Electric Co., through Gilbert Associates, Reading, Pa., to American Bridge Co., Pittsburgh.
- 1600 Tons, Chicago, warehouse to American Bridge Co., Pittsburgh.
- 1500 Tons, Noralyn, Fla., building for International Minerals & Chemical Corp., to Ingalls Iron Works Co., Birmingham.
- 1100 Tons, Bellwood, Ill., building for Chicago Screw Co. to American Bridge Co., Pittsburgh.
- 1100 Tons, State of New Mexico, bridge A-195 and B-62 Atchison, Topeka & Santa Fe R.R. to American Bridge Co., Pittsburgh, previously reported as 1000 tons.
- 500 Tons, Robinson, Ill., cracking tower, Ohio Oil Co. to American Bridge Co., Pittsburgh.
- 265 Tons, Philadelphia, Radbill Oil Co., building, to Lehigh Structural Steel Co., Allentown, Pa.
- 242 Tons, Jenkintown, Pa., Standard Pressed Steel Co., to Belmont Iron Works, Philadelphia.

#### • • • Fabricated steel inquiries

### NHA Offers Premium Of \$10 and \$40 a Ton To Makers of Soil Pipe

#### Washington

• • • Payment of premiums of \$10 and \$40 per short ton for production of cast iron soil pipe above established quotas has been authorized by NHA order (Amended Reg. 8) which is retroactive to Sept. 1.

For Saturday production, that is, production on any Saturday which is the sixth day of a work week or the fifth work day of a week which includes a national holiday, the premium will be \$40 a short ton, for all regular production above quotas, \$10 a short ton will be allowed.

Only producers of both pipe and fittings are eligible for the bonus payments, it is pointed out. Also, 75 pct of the output must be shipped during the month covered by the claim and shipments for that month and preceding month must be 90 pct of combined production during those two months.

Quotas are to be based on the latest three full operating months during the period of January 1946 through May, or 90 pct of production of the highest month worked during the same period whichever is higher.

The \$40 a ton for Saturday production, however, is paid only

this week included the following:

- 1500 Tons, Schenectady, turbine building for General Electric Co., Stone & Webster Engineering Corp., Boston engineers.
- 1500 Tons, Kingham, Ariz., gantry trestle for Davis Lam, U. S. Bureau of Reclamation.
- 450 Tons, Whiting, Ind., addition to welding and machine shop, Standard Oil Co. of Indiana.
- 300 Tons, Rhinelander, Wis., factory building.
- 225 Tons, Somerville, Mass., diesel shop for Boston & Maine R.R.
- 150 Tons, Tamaqua, Pa., Lehigh Navigation Coal Co., stoker plant, bids in.
- 130 Tons, Chicago, building for American Regulator Co.
- 100 Tons, Boston, housing addition for New England Baptist Hospital.

#### • • • Reinforcing bar awards this week included the following:

- 175 Tons, Bolivar, Tenn., state hospital, to Virginia Steel Co., Birmingham.

#### • • • Plate inquiries this week included the following:

- 1900 Tons, Newport News Shipbuilding & Drydock Co., Va., ½-in. stainless plates for pen stocks for Aswan Dam, Egypt.
- 100 Tons, Saugus, Mass., standpipe.

when such output is equal to or in excess of the established quota.

For example, if a quota is 400 tons and a total of 440 tons is produced without Saturday labor, \$10 a ton is paid on the total excess. However, using the same production and quota figures, if 80 tons

### Annual Wage

• • • "Actually, the annual wage . . . is not a problem at all when you have a stabilized business. If you have a seasonal business, there is no way you can do it. No one is proposing, just to take an extreme example, an annual wage for cherry pickers in northern Michigan." — C. E. Wilson, president of General Motors in talk before National Press Club.

of the total were produced on Saturday, the producer would be eligible for \$40 a ton bonus only on the 40 tons produced in excess of the established quota.

A hardship clause permits a producer to receive the \$40 premium for Saturday production, however, even though he did not meet the monthly quota if it can be proved the quota deficit was due to circumstances beyond his control.

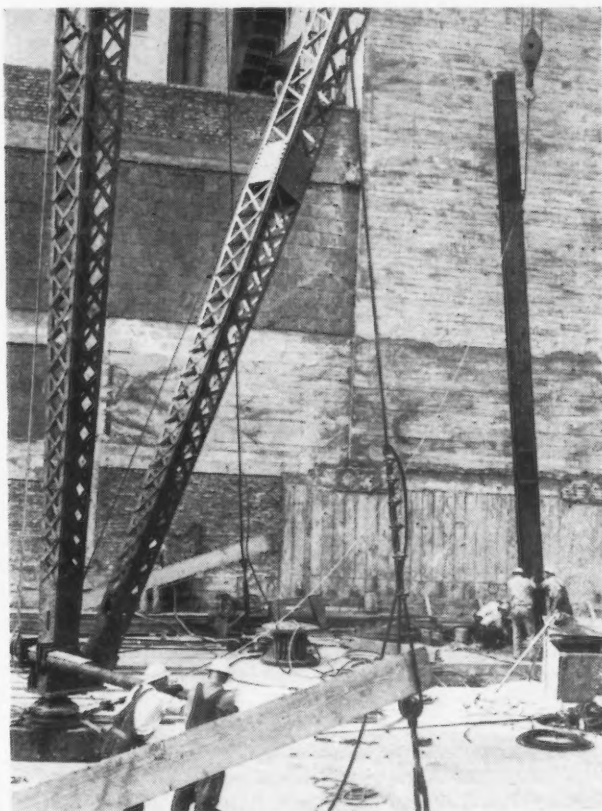
Applications for quotas are filed on form NHA 14-64 and claims for payments are filed on form NHA 14-65, both of which are obtained from the nearest RFC loan agency.

The premium payment plan is scheduled to expire June 30, 1947.

• • •

**FIRST SINCE THE WAR: A 37-ft H column swings into place for San Francisco's new Matson building. It is the first multiple story steel frame building to be built there since 1941. Bethlehem Pacific's Alameda plant is furnishing 800 tons of fabricated steel for the structure, which will start out as a seven story building with provision for adding eight additional stories later.**

• • •



# MACHINE TOOLS

... News and Market Activities

## Surplus Sales Cut August Shipments

... Machine tool shipments in August, estimated at \$26,850,000 by the National Machine Tool Builders' Association, once again fell short of the \$30,000,000 monthly level set up by some observers as a completely unofficial but consonant goal.

Since January, when shipments totaled \$30,263,000, the industry has not reached that operational province known as pay dirt. Shortages of bearings, electrical equipment and castings have been factors, but important as any has been the presence of the government-owned machine tool surplus which WAA has been selling off at a fairly rapid rate.

New firm orders in August were estimated at \$26,196,495 and cancellations at \$4,445,137, the highest amount, dollarwise, the industry has had this year. Unfilled firm orders stood at \$181,655,516, close to the average for the eight months so far this year.

New foreign firm orders totaled \$5,871,453, or about 22.4 pct of the new firm order total. August foreign orders also hit a new low for 1946, while cancellations showed a relatively incidental increase to \$542,779, or 12.2 pct of the total cancellations.

Foreign shipments were estimated at \$5,493,169 or 22.5 pct of the total shipments. Unfilled foreign orders stood at \$53,661,837, or about 29 pct of the industry's total backlog.

With some sources in the industry expecting a solar plexus punch from the surplus some time this fall, because of cancellation of the lessee contracts, it begins to look as if 1946 will be no banner year for the industry. Using the \$30,000,000 monthly shipment yardstick, it is readily apparent that things are not going in the right direction, since an increase of 20 pct in price ceilings was effective on Apr. 19 and partial decontrol came about on July 26.

There are already some observers who feel that a shortage of castings will close a number of builders down this winter, a devel-

opment, of course, which remains to be seen. Some plants are finding themselves closer to a stock condition at this particular time than they had anticipated, and business is pretty generally described as "spotty."

As a sidelight on WAA's activities, it was reported that machine tools which cost the government nearly \$100 million were sold by

### Find Novel Grinder

Washington

... A precision grinding machine with an optical system which enables the operator to compare his work with the engineering drawings as the work proceeds is available for examination and testing by American manufacturers. This was disclosed here by the Office of Technical Services, whose investigators discovered the machine, built in 1944, in Germany.

The 4500-lb unit employs a glass screen plate, magnifies the work 16 or 40 times and is controlled by two handwheels. A final estimate of its efficiency will be available after it has been tested under American conditions. Manufacturers interested in examining or testing it should communicate with Carl Hoffman, Chief, Material Unit, TTID, Office of Technical Services, Dept. of Commerce, Washington.

approved dealers from Jan. 1 to Aug. 15, 1946. Return to the government on these sales was \$45,839,065.

During the Aug. 1-15 period, dealers in 31 WAA regional offices sold \$8,688,768 worth (new cost) of machine tools for \$4,180,384. During the last two weeks of July, dealers in the same regions sold \$6,849,980 worth of machine tools for \$3,166,578.

Dealers in the Detroit region reported the largest volume of disposals with sales amounting to \$1,295,646 for tools costing \$2,602,419. New York was a close second with sales of \$1,076,217 for tools costing \$2,253,797. Cleveland was

third, selling \$1,137,194 worth for \$618,589. Detroit also led in sales during the July 15-31 period with sales totaling \$1,065,959 for materials costing \$2,166,328.

The full implications of machine tool delivery deferments resulting from the stalling of the Ford and Chevrolet light car programs have not yet been felt although it is now reasonably certain that no foreseeable turn of events will result in reinstatement of the light car program this year. In addition to machine tools a considerable number of contracts for new dies and miscellaneous small tools have also been "deferred." Reported cancellations of other tooling programs have thus far been moderate but it now appears that the edge is falling off the considerable volume of foreign business which has been placed in Detroit. Recent drastic curtailments in passenger car schedules are expected to be reflected in lower deliveries of expendable items like cutters in the very near future.

In Cincinnati, demand for machine tools is quiet. Foreign business has declined to little more than a third of present demand and some sources indicate further decline will be in order for at least a while. Domestic business is fair, but lacks buoyancy.

In Boston and the East, while government offerings of surplus tools continue a big market factor, and September bookings by manufacturers and dealers are well below a year ago, some sources feel that perhaps a turn toward improvement is in the making. This feeling apparently is based on the volume of actual business booked, awakening interest by users in new tools and the number of quotations made during September. All of these factors in the East have shown an increase over August.

New England builders produced less machine tools in September than in August because foundries, unable to secure sufficient pig iron and scrap to maintain operating schedules, have fallen down somewhat on castings for the machine tool industry.



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stand up under terrific beatings... steel mill machinery, paper mill equipment, excavators, cranes, hoists, rock crushers, industrial production machinery and other equipment... all find KAYDON Bearings O.K. for heavy duty.

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# NONFERROUS METALS

... News and Market Activities

## New Advisory Committee For Bronze Industry

Washington

• • • Appointment of an advisory committee for the brass and bronze ingot industry was announced on Oct. 3 by OPA. An organizational meeting of the committee will be held soon.

The Brass and Bronze Ingot Industry Advisory Committee is made up of the following representative members of the industry:

George A. Avril, G. A. Avril Smelting Corp., Cincinnati; Alfred C. Barbour, Roessing Bronze Co., Pittsburgh; William J. Bullock, W. J. Bullock, Inc., Birmingham; Lazarus Chapman, H. Kramer & Co., Chicago; Louis I. Gross, Whipple & Choate Co., Bridgeport, Conn.; Leo Halpern, Federated Metals Div., American Smelting & Refining Co., New York; Harold L. Phillips, Electric Smelting Co., San Francisco; and Clarence B. White, White Brothers Smelting Corp., Philadelphia.

## Bolivian Tin for U.S. May Reach 19,000 Tons

Washington

• • • State Dept. officials have announced that the United States has completed negotiations with Bolivian mine owners for purchase contracts for tin. Under the contract the United States will receive approximately 50 pct of all Bolivian tin and virtually the total output of the mines with which the contract is drawn. These mines normally produce 18,000 to 19,000 tons of tin a year.

Before 1940 the United States

received Bolivian tin only through other countries. During the past few years United States annual tin requirements of approximately 60,000 tons have been met by shipments from Bolivia, United Kingdom, Belgian Congo, Netherlands East Indies and Siam and by withdrawals from stockpiles in this country.

## Contract for Foreign Copper, Lead Supplies

New York

• • • Contracts have been concluded by the Office of Metals Reserve for the purchase of 40,000 tons of Chilean copper for delivery in the fourth quarter and 24,000 tons of foreign lead, largely from Mexico. The copper purchase price was 15 $\frac{7}{8}$ ¢ per lb at Chilean ports, equivalent to 16 $\frac{1}{2}$ ¢ at New York. The lead purchase price was 10 $\frac{1}{4}$ ¢ per lb at Gulf ports.

This tonnage of lead importation, 8000 tons per month, compares with about 20,000 tons per month this time last year and represents only 20 pct to 25 pct of foreign lead received during that period.

## Reduce Allocated Lead

Washington

• • • Total lead allocations for the fourth quarter will amount to 212,500 tons, a reduction of 20,000 tons from the third quarter, CPA has announced.

At the same time, the lead order (M-38) was amended to give new automobiles and other new equipment preference for the lead allo-

## Monthly Average Prices

• • • The average prices of the major nonferrous metals in September, based on quotations appearing in THE IRON AGE, were as follows:

	Cents Per Lb.
Electrolytic copper, Conn. Valley .....	14.375
Lake copper, Conn. Valley .....	14.375
Straits tin, New York	52.00
Zinc, East St. Louis..	8.25
Zinc, New York .....	8.69
Lead, St. Louis.....	8.10
Lead, New York.....	8.25

cated to storage batteries at the expense of replacement battery production.

Total lead allocations for the automobile battery industry have been established at 57,200 tons, a 500 ton drop from the third quarter.

Manufacturers who use less than 70 tons of lead per quarter for the production of replacement batteries will be permitted to manufacture the same number of batteries as in the third quarter. Manufacturers who used more than 70 tons of lead during the third quarter will be cut back 20 pct in their lead use for replacement batteries.

## Antimony

• • • Antimony continues to be held at the ceiling price of 14 $\frac{1}{2}$ ¢ per lb at Laredo, Tex., although the world price is reported to be between 22¢ and 24¢ per lb. There has been some discussion between industry and OPA on a price increase although no action has been taken yet. The metal continues under strict allocation except for requirements of 100 lb or less per month. Antimony is the cheapest hardening agent for lead alloys and compares with tin at 52¢ per lb and silver at 90 $\frac{1}{8}$ ¢ per oz. Under these circumstances consumers would readily agree to pay 22¢ per lb in order to secure their requirements of the metal.

## Nonferrous Metals Prices

Cents per pound

	Oct. 2	Oct. 3	Oct. 4	Oct. 5	Oct. 7	Oct. 8
Copper, electro., Conn. ....	14.375	14.375	14.375	14.375	14.375	14.375
Copper, Lake, Conn. ....	14.375	14.375	14.375	14.375	14.375	14.375
Tin, Straits, New York .....	52.00	52.00	52.00	52.00	52.00	52.00
Zinc, East St. Louis .....	8.25	8.25	8.25	8.25	8.25	8.25
Lead, St. Louis .....	8.10	8.10	8.10	8.10	8.10	8.10



## NONFERROUS PRICES

### Primary Metals

(Cents per lb, unless otherwise noted)

Aluminum, 99+%, f.o.b. shipping point (min. 10,000 lb)	15.00
Aluminum pig, f.o.b. shipping point	14.00
Antimony, American, Laredo, Tex.	14.50
Beryllium copper, 3.75-4.25% Be; dollars per lb contained Be	\$14.75
Beryllium aluminum, 5% Be; dollars per lb contained Be	\$30.00
Cadmium, del'd	\$1.25
Cobalt, 97-99% (per lb)	\$1.50 to \$1.57
Copper, electro, Conn. Valley	14.375
Copper, electro, New York	14.125
Copper, lake, Conn. Valley	14.375
Gold, U. S. Treas., dollars per oz.	\$35.00
Indium, 99.8%, dollars per troy oz	\$ 2.25
Iridium, dollars per troy oz.	\$125.00
Lead, St. Louis	8.10
Lead, New York	8.25
Magnesium, 99.9 + %, carlots	20.50
Magnesium, 12-in. sticks, carlots	27.50
Mercury, dollars per 76-lb flask, f.o.b. New York	\$96 to \$99
Nickel, electro, f.o.b. refinery	35.00
Palladium, dollars per troy oz.	\$24.00
Platinum, dollars per troy oz.	\$88.00
Silver, New York, cents per oz.	90.125
Tin, Straits, New York	52.00
Zinc, East St. Louis	8.25
Zinc, New York	8.69
Zirconium copper, 6 pct Zr, per lb contained Zr	\$ 6.00

### Remelted Metals

(Cents per lb)

Aluminum, No. 12 Fdy. (No. 2)	13.25 to 13.50
Aluminum, deoxidizing	
No. 3	12.25 to 12.75
No. 4	12.00
Brass Ingot—ceiling prices	
85-5-5-5 (No. 115)	15.75
88-10-2 (No. 215)	19.00
80-10-10 (No. 305)	18.50
No. 1 Yellow (No. 405)	12.75

### Copper, Copper Base Alloys

(Mill base, cents per lb)

	Extruded shapes	Rods	Sheets
Copper	25.66		25.81
Copper, H.R.	22.16		
Copper drawn	23.16		
Low brass, 80%	24.35	24.66	
High brass		23.67	
Red brass, 85%		24.67	24.98
Naval brass	23.84	22.59	28.53
Brass, free cut		18.53	
Commercial, bronze		25.50	25.81
Manganese bronze	27.45	25.95	32.03
Phosphor bronze, A			
B, 5%		43.70	43.45
Muntz metal	23.59	22.34	26.78
Everdur, Herculeyol			
Olympic or equal		29.82	30.83
Nickel silver, 5%		34.44	32.38
Architectural bronze	22.50		

### Aluminum

(Cents per lb, base, subject to extras for quantity, gage, size, temper and finish)

Drawn tubing: 2 to 3 in. OD by 0.065 in. wall: 3S, 43.5¢; 52S-O, 67¢ 24S-T, 71¢; base, 30,000 lb.

Plate: ¼ in. and heavier: 2S, 3S, 21.2¢; 52S, 24.2¢; 61S, 23.8¢; 24S, 24S-AL, 24.2¢; 75S, 75S-AL, 30.5¢; base, 30,000 lb and over.

Flat Sheet: 0.136-in. thickness: 2S, 3S, 23.7¢; 52S, 27.2¢; 61S, 24.7¢; 24S-O, 24S-OAL, 26.7¢; 75S-O, 75S-OAL, 32.7¢; base, 30,000 lb and over.

Extruded Solid Shapes: factor determined by dividing the perimeter of the shape by its weight per foot. For factor 1 through 4, 3S, 26¢; 14S, 32.5¢; 24S, 35¢; 53S, 61S, 28¢; 63S, 27¢; 75S, 45.5¢; base, 30,000 lb.

Wire, Rod and Bar: screw machine stock, rounds, 17S-T, ¼ in., 29.5¢; ½ in., 27.5¢; 1 in., 26¢; 2 in., 24.5¢; hexagons, ¼ in., 35.5¢; ½ in., 30¢ 1 in., 2 in., 27¢; base, 5000 lb. Rod: 2S, 3S, 1¼ to 2¼ in.

(Continued, See Next Column)

diam, rolled, 23¢; cold-finished, 23.5¢ base, 30,000 lb. Round Wire: drawn, coiled, B & S gage 17-18: 2S, 3S, 33.5¢; 56S, 39.5¢; 10,000 lb base; B & S gage 00-1: 2S, 3S, 21¢; 56S, 30.5¢; B & S 15-16: 2S, 3S, 32.5¢; 56S, 38¢; base, 30,000 lb.

### NONFERROUS SCRAP METAL QUOTATIONS

†(OPA basic maximum prices, cents per lb., f.o.b. point of shipment, subject to quality, quantity and special preparation premiums—other prices are current quotations)

#### Copper, Copper Base Alloys

##### OPA Group 1†

No. 1 wire, No. 1 heavy copper	11.50
No. 1 tinned copper wire, No. 1 tinned heavy copper	11.50
No. 2 wire, mixed heavy copper	10.50
Copper tuyeres	10.50
Light copper	9.50
Copper borings, No. 1	11.50
No. 2 copper borings	10.50
Lead covered copper wire, cable	
Lead covered telephone, power cable	
Insulated copper	

##### OPA Group 2†

Bell metal	17.25
High grade bronze gears	15.00
High grade bronze solids	
Low lead bronze borings	
Babbitt lined brass bushings	14.75
High lead bronze solids	
High lead bronze borings	
Red trolley wheels	12.50
Tinny (phosphor bronze) borings	12.25
Tinny (phosphor bronze) solids	12.25
Copper-nickel solids and borings	11.00
Bronze paper mill wire cloth	11.25
Aluminum bronze solids	10.75
Soft red brass (No. 1 composition)	10.75
Soft red brass borings (No. 1)	10.75*
Gilding metal turnings	10.25
Contaminated gilded metal solids	10.25
Unlined standard red car boxes	10.00
Lined standard red car boxes	9.50
Cocks and faucets	9.50
Mixed brass screens	9.50
Red brass breakage	9.25
Old nickel silver solids	7.60
Old nickel silver borings	7.50
Copper lead solids, borings	6.75
Yellow brass castings	7.50
Automobile radiators	8.75
Zincy bronze solids, borings	9.75

##### OPA Group 3†

Fired rifle shells	9.50
Brass pipe	8.75
Old rolled brass	8.25
Admiralty condenser tubes	8.75
Muntz metal condenser tubes	8.25
Plated brass sheet, pipe reflectors	7.75
Manganese bronze solids	8.00 <sup>1</sup>
Manganese bronze solids	7.00 <sup>2</sup>
Manganese bronze borings	7.25

##### OPA Group 4†

Refinery brass	6.00*
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\*Price varies with analysis. <sup>1</sup>Lead content 0.00 to 0.40 pct. <sup>2</sup>Lead content 0.41 to 1.00 pct.

### Magnesium

Sheet, rod, tubes, bars, extruded shapes subject to individual quotations. Metal turnings: 100 lb or more, 46¢ a lb; 25 to 90 lb, 56¢; less than 25 lb, 66¢.

#### Brass Mill Scrap†

Briquetted cartridge brass turnings	10.375
Cartridge brass turnings, loose	9.625
Loose yellow brass trimmings	9.625

### Aluminum

#### Plant scrap, segregated

2S solids	10.50 to 11.00
Dural alloys, solids 14, 17, 18	
24S, 25S	8.50 to 9.00
turnings, dry basis	7.50 to 8.00
Low copper, alloys 51, 52, 61	
63S solids	9.50 to 10.00
turnings, dry basis	8.50 to 9.00

#### Plant scrap, mixed

Solids	8.50
Turnings, dry basis	7.50

#### Obsolete scrap

Old sheet and utensils	9.50
Old castings and forgings	8.50 to 9.00
Pistons, free of struts	8.50

### Magnesium\*

#### Segregated plant scrap

Pure solids and all other solids, exempt	
Borings and turnings	1.50

#### Mixed, contaminated plant scrap

Grade 1 solids	3.00
Grade 1 borings and turnings	2.00
Grade 2 solids	2.00
Grade 2 borings and turnings	1.00

\*Nominal.

### Zinc

New zinc clippings, trimmings	7.50
Engravers, lithographers plates	7.50
Old zinc scrap	5.75
Unswaged zinc dross	6.00
Die cast slab	5.50
New die cast scrap	5.45
Radiator grilles, old and new	4.50
Old die cast scrap	4.00

### Lead

Deduct 1.40¢ a lb from refined metal basing point prices for refinery charge on used battery plates.

Soft lead scrap	7.50
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### Nickel

Ni content 98+%, Cu under ¼%, 23¢ per lb; 90 to 98% Ni, 23¢ per lb contained Ni.

## ELECTROPLATING ANODES AND CHEMICALS

### Anodes

(Cents per lb, f.o.b. shipping point in 500 lb lots)

Copper, frt. allowed	
Cast, oval, 15 in. or longer	29.75
Electrodeposited	23.47
Rolled, oval, straight, delivered	23.72
Curved, 18 in. or longer, delivered	23.72
Brass, 80-20, frt. allowed	
Cast, oval, 15 in. or longer	27.25
Zinc, cast, 99.99, 15 in. or longer	17½
Nickel, 99 pct plus, frt. allowed	
Cast	47
Rolled, depolarized	48
Silver, 999 fine	
Rolled, 100 oz. lots, per oz.	95½

### Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 1-5 bbls	34.00
Copper sulphate, 99.5, crystals, bbls	7.75
Nickel salts, single, 425 lb bbls, frt. allowed	13.50
Silver cyanide, 100 oz lots, per oz	0.749
Sodium cyanide, 96 pct, domestic, 125 lb drums	15.00
Zinc cyanide, 100 lb drums	33.00
Zinc sulphate, 89 pct, crystals, bbls, frt. allowed	6.35

# SCRAP

... News and Market Activities

## Dealers Say Controls Won't Boost Shipments

### New York

••• Dealers and brokers generally doubt that establishment of controls on scrap inventories will bring out much additional scrap. A few relatively small mills have fair stockpiles, it is reported, but they are not excessive and most mills are in quite the opposite condition. Reports of large dealer stockpiles have now been fairly well scotched by qualified observers.

There is unanimous opinion that it will have no effect on cast grades because there was never any indication that this material was hoarded for a price rise. While automobile graveyards have some good cast, CPA action will not move it. It is estimated that there are 5 million more cars on the road over

*For a listing of the recommendations made to CPA by its Iron and Steel Scrap Industry Advisory Committee, see p. 114.*

2 yr old than there were in 1941. Only the replacement of jalopies with new cars will really boom this market.

**PITTSBURGH**—The scrap supply situation here has been aggravated by the power strike, in that many fabricators have been forced to close up shop during the work stoppage. Shipments are far below mill requirements, and the fact that many mills outside of the Pittsburgh area have obtained allocations to buy low phos is causing those mills in the district without such allocations considerable difficulty in getting out-of-area shipments.

**CHICAGO**—OPA's theories on scrap are not satisfactory substitutes and cannot be melted in an openhearth, local wags say. The flow of cast scrap has not increased primarily because there isn't any available. Railroad lists are but a small fraction of what they should be and won't increase until they get larger deliveries of new steel. Generally the picture remains as bleak as ever with little hope of immediate improvement.

**BOSTON**—Small fry continue to bootleg in cast, and some small yards to upgrade material such as billing machine shop turnings as shovellings, and No. 2 steel (excluding automobile) as low phos to electric furnaces. The rank and file of the trade, however, are sticking to ceilings but not doing much business. Recommended CPA controls and OPA's reaffirm-

ing its stand on prices, will some yardsmen say, drive them out of business.

**NEW YORK**—Little change in the gloomy picture on cast and steel scrap is evident here. While some sources report a slight improvement the overall volume is low for this time of the year. Dealers here doubt that the CPA inventory control plan will bring out any more material but the present volume can be held, they feel, if there is no interference with existing practices.

**CLEVELAND**—There has been little change in the scrap market here. All major consumers are operating with "allocations" and in some cases, this authority to buy electric furnace scrap for the openhearth has run out and is now in the process of renewal. On one renewal, one major consumer was granted only 50 pct of his original "allocation." Some consumers, however, have had their "allocations" renewed for the original tonnages, according to reports. Shipments have fallen off slightly, particularly in the Warren area, where a power strike is underway, and a further drop in shipments is expected to follow the institute meeting.

**PHILADELPHIA**—Mills here are still uneasy about their scrap supplies. Some say they are operating on a day-to-day basis and cannot estimate the coming week's ingot rate. It is said that there is little bona fide low phos available here. Yet Pittsburgh mills continue to draw scrap westward by buying "low phos" under authorization. There are reports of wholesale violations of regulations and the new OPA price schedule with particular respect to cast scrap. A mill bid for Navy scrap at 50¢ per ton less than the price bid by brokers has been considered the ceiling, like theirs, and has received the award.

**DETROIT**—The slight increase in scrap movement noted here during the past few weeks is expected to be more than nullified by the 40 pct reduction in Chrysler output which goes into effect this week. Not only Chrysler scrap volume but scrap output at Briggs and many other automotive suppliers will eventually be hit by the Chrysler curtailment. Some favorable response has been noted by the foundry industry here to the recent increase in cast grades.

**CINCINNATI**—Iron and steel scrap market in this area shows relatively no change from the tense condition that has prevailed for the past several weeks. All mill melters are pressing for the better grades of scrap, and larger quantities, with cast being the most urgent. Brokers and dealers continue to exert efforts to get all available scrap, but so far nothing much has been brought forth.

**BUFFALO**—The outlook for scrap supplies appears to be deteriorating rapidly and sentiment is decidedly pessimistic. Predictions are heard that reserves of at least one of the leading consumers will be exhausted in another 30 days, barring a miracle. Lone bright spot in the picture is the prospect for an upturn in the Lake movement. One 5000-ton cargo from Duluth is due this weekend and there is a possibility that another boat will be loaded for Buffalo before the end of the month.

**ST. LOUIS**—Shipments of scrap iron to mills here have fallen sharply. Mills in the area are cutting into their inventories, which now are said to average about 30 days' consumption. Railroad offerings are light, and these are being allocated mostly to outside steel mills.

**BIRMINGHAM**—Virtually no material is moving here and the scrap shortage in this area is becoming a serious threat to the continued high operations of steel mills, pipe shops and foundries. Tonnages of rerolling rail available are not sufficient to allow Connors Steel Co. to maintain full production of reinforcing bars.

**TORONTO**—With the settlement of the strikes that tied up Canada's big steel mills, dealers have resumed deliveries of scrap iron and steel to these consumers and accumulated stock piles are disappearing. While there was no improvement in receipts during the past week or 10 days, dealers look for early resumption of larger tonnages of scrap from industrial plants as fresh steel supplies become available and operations increase.

## More Yards for Lease

### Washington

••• Bringing the total up to 22, eight more shipyards have been made available for lease in connection with the shipbreaking phase of the iron and steel scrap drive. In making this announcement CPA and WAA said that their rental will be computed on the basis of scrap to be produced plus a minimum rental for property and facilities.

Proposals for rentals of these yards should be sent to the WAA office having jurisdiction where the yard is located with an additional copy sent to the Shipbreaking Consultant, 4032 Social Security Bldg., Washington.

The additional yards now available for the program are: Gibbs Gas Engine Co., Jacksonville, Fla.; Chicago Bridge & Iron Co., Seneca, Ill.; Jeffersonville Boat & Machine Co., Jeffersonville, Ind., (WAA, Chicago); Missouri Valley Bridge & Iron Co., Evansville, Ind.; Pollock-Stockton Co., Stockton, Calif.; Lake Washington Shipyards, Houghton, Wash.; Commercial Iron Works, Portland, Ore.; Willamette Iron & Steel Co., Portland, Ore.



# IRON AND STEEL SCRAP PRICES

## PITTSBURGH

Per gross ton delivered to consumer:  
Cast grade f.o.b. shipping point

No. 1 hvy. melting	\$20.00*
RR. hvy. melting	21.00*
No. 2 hvy. melting	20.00*
RR. scrap rails	21.50*
Rails 3 ft. and under	23.50*
No. 1 comp'd sheets	20.00*
Hand bldd. new shts.	20.00*
Hvy. axle turn.	19.50*
Hvy. steel forge turn.	19.50*
Mach. shop turn.	15.00*
Short shov. turn.	17.00*
Mixed bor. and turn.	15.00*
Cast iron borings	16.00*
No. 1 cupola cast.	25.00*
Charging box cast.	21.00*
Heavy breakable cast.	20.00*
Burnt cast.	17.75*
Malleable	24.00*
RR. knuck. and coup.	24.50*
RR. coil springs	24.50*
Rail leaf springs	24.50*
Rolled steel wheels	24.50*
Low phos.	22.50*

## CHICAGO

Per gross ton delivered to consumer:  
Cast grades f.o.b. shipping point

No. 1 hvy. melting	\$18.75*
No. 2 hvy. melting	18.75*
No. 1 bundles	18.75*
No. 2 dealers' bndls.	18.75*
Bundled mach. shop turn.	18.75*
Galv. bundles	16.75*
Mach. shop turn.	13.75*
Short shovels, turn.	15.75*
Cast iron borings	14.75*
Mix. borings & turn.	13.75*
Low phos. hvy. forge.	23.75*
Low phos. plates	21.25*
No. 1 RR. hvy. melt.	19.75*
Reroll rails	22.25*
Miscellaneous rails	20.25*
Angles & splice bars	22.25*
Locomotive tires, cut	24.25*
Cut holsters & side frames	22.25*
Standard stl. car axles	25.75*
No. 3 steel wheels	23.25*
Combers & knuckles	23.25*
Malleable	24.00*
No. 1 mach. cast.	20.00*
Rails 3 ft. and under	22.25*
No. 1 agricul. cast.	20.00*
Hvy. breakable cast.	20.00*
RR. grate bars	15.25*
Cast iron brake shoes	17.75*
Stove plate	23.00*
Clean auto cast.	27.00*
Cast iron carwheels	22.00*

## CINCINNATI

Per gross ton delivered to consumer:  
Cast grades f.o.b. shipping point

No. 1 hvy. melting	\$19.50*
No. 2 hvy. melting	19.50*
No. 1 bundles	19.50*
No. 2 bundles	19.50*
Mach. shop turn.	\$10.50 to 11.00
Shoveling turn.	12.50 to 13.00
Cast iron borings	11.50 to 12.00
Mixed bor. & turn.	11.50 to 12.00
Low phos. plate	22.00*
No. 1 cupola cast.	25.00*
Hvy. breakable cast.	20.00*
Stove plate	23.00*
Scrap rails	21.00*

## BOSTON

Dealers' buying prices per gross ton,  
f.o.b. cars

No. 1 hvy. melting	\$15.05*
No. 2 hvy. melting	15.05*
Nos. 1 and 2 bundles	15.05*
Bushellings	15.05*
Turnings, shovellings	12.05*
Machine shop turn.	10.05*
Mixed bor. & turn.	10.05*
Cl'n cast chem bor.	\$13.06 to 14.15*
No. 1 machinery cast.	25.00*
No. 2 machinery cast.	21.00*
Breakable cast.	20.00*
Stove plate	23.00*

## DETROIT

Per gross ton, brokers' buying prices:

No. 1 hvy. melting	\$17.32*
No. 2 hvy. melting	17.32*
Nos. 1 and 2 bundles	17.32*
New bushelling	17.32*
Flashing	17.32*
Mach. shop turn.	12.32*
Short shov. turn.	14.32*

Going prices as obtained in the trade  
by IRON AGE editors, based on rep-  
resentative tonnages. Where asterisks  
are used they indicate the OPA  
ceiling price to which must be added  
brokerage fee and adjusted freight.

Cast iron borings	13.32*
Mixed bor. & turn.	13.32*
No. 1 cupola cast.	19.42*
Low phos. plate	25.00*
Charging box cast.	21.00*
Hvy. breakable cast.	20.00*
Stove plate	23.00*
Automotive cast.	27.00*

## PHILADELPHIA

Per gross ton delivered to consumer:  
Cast grades f.o.b. shipping point

No. 1 hvy. melting	\$18.75*
No. 2 hvy. melting	18.75*
No. 2 bundles	18.75*
Mach. shop turn.	13.75*
Shoveling turn.	15.75*
Cast iron borings	14.75*
Mixed bor. & turn.	13.75*
No. 1 cupola cast.	25.00*
Hvy. breakable cast.	20.00*
Cast. charging box	21.00*
Clean auto cast.	27.00*
Hvy. axle forge turn.	15.25*
Low phos. plate	21.25*
Low phos. punchings	21.25*
RR. steel wheels	23.25*
RR. coil springs	23.25*
RR. malleable	22.00*

## ST. LOUIS

Per gross ton delivered to consumer:  
Cast grades f.o.b. shipping point

Heavy melting	\$17.50*
Bundled sheets	17.50*
Mach. shop turn.	12.50*
Locomotive tires, uncut	21.00*
Misc. std. sec. rails	19.00*
Rerolling rails	21.00*
Steel angle bars	21.00*
Rails 3 ft. and under	21.50*
RR. springs	22.00*
Steel car axles	24.50*
Stove plate	23.00*
Grate bars	15.25*
Brake shoes	17.75*
Malleable	24.00*
Cast iron carwheels	22.00*
No. 1 machinery cast.	22.00*
Breakable cast.	20.00*

## BIRMINGHAM

Per gross ton delivered to consumer:  
Cast grades f.o.b. shipping point

No. 1 hvy. melting	\$17.00*
No. 2 hvy. melting	17.00*
No. 2 bundles	17.00*
No. 1 bushelling	17.00*
Long turnings	12.00*
Shoveling turnings	14.00*
Cast iron borings	13.00*
Bar crops and plate	\$18.50 to 19.50*
Structural and plate	18.50 to 19.50*
No. 1 cast.	25.00*
Stove plate	23.00*
Steel axles	18.50*
Scrap rails	18.50*
Rerolling rails	20.50*
Angles & splice bars	20.50 to 21.00*
Rails 3 ft. & under	21.00*
Cast iron carwheels	22.00*

## YOUNGSTOWN

Per gross ton delivered to consumer:  
Cast grades f.o.b. shipping point

No. 1 hvy. melting	\$20.00*
No. 2 hvy. melting	20.00*
Low phos. plate	22.50*
No. 1 bushelling	20.00*
Hydraulic bundles	20.00*
Mach. shop turn.	15.00*
Short shovel. turn.	17.00*
Cast iron borings	16.00*

## NEW YORK

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	\$15.33*
No. 2 hvy. melting	15.33*
Comp. black bundles	15.33*
Comp. galv. bundles	15.33*
Mach. shop turn.	10.33*
Mixed bor. & turn.	10.33*
Shoveling turn	12.33*
No. 1 cupola cast.	25.00*

Hvy. breakable cast.	20.00*
Charging box cast.	21.00*
Stove plate	23.00*
Clean auto cast.	27.00*
Unstrip. motor blks.	20.00*
Cl'n chem. cast bor.	14.33*

## BUFFALO

Per gross ton delivered to consumer:  
Cast grades f.o.b. shipping point

No. 1 hvy. melting	\$19.25*
No. 1 bundles	19.25*
No. 2 bundles	19.25*
No. 2 hvy. melting	19.25*
Mach. shop turn.	14.25*
Shoveling turn.	16.25*
Cast iron borings	15.25*
Mixed bor. & turn.	14.25*
No. 1 cupola cast.	25.00*
Charging box cast.	21.00*
Stove plate	23.00*
Clean auto cast.	27.00*
Malleable	24.00*
Low phos. plate	21.75*
Scrap rails	20.75*
Rails 3 ft. & under	22.75*
RR. steel wheels	23.75*
Cast iron carwheels	22.00*
Rlt. coil & leaf spgs.	23.75*
RR. knuckles & coup.	23.75*
No. 1 bushelling	19.25*

## CLEVELAND

Per gross ton delivered to consumer:  
Cast grades f.o.b. shipping point

No. 1 hvy. melting	\$19.50*
No. 2 hvy. melting	19.50*
Compressed sheet stl.	19.50*
Drop forge flashings	19.00*
No. 2 bundles	19.50*
Mach. shop turn.	14.50*
Short shovel	16.50*
No. 1 bushelling	19.50*
Steel axle turn.	19.00*
Cast iron borings	15.50*
Mixed bor. & turn.	14.50*
No. 2 bushelling	17.00*
No. 1 machinery cast.	25.00*
Malleable	24.00*
Railroad cast	20.00*
Railroad grate bars	15.25*
Stove plate	23.00*
RR. hvy. melting	20.50*
Rails 3 ft. & under	23.00*
Rails 18 in. & under	24.25*
Rails for rerolling	23.00*
Elec. furnace punch	22.00*

## SAN FRANCISCO

Per gross ton delivered to consumer:  
Cast grade f.o.b. shipping point

RR. hvy. melting	\$18.00*
No. 1 hvy. melting	17.00*
No. 2 hvy. melting	17.00*
No. 2 bales	\$15.00 to 15.75
No. 3 bales	8.50 to 9.25
Mach. shop turn.	6.50 to 7.25
Elec. furn. 1 ft. und.	15.50 to 17.00
No. 1 cupola cast	19.00 to 21.00

## LOS ANGELES

Per gross ton delivered to consumer:  
Cast grade f.o.b. shipping point

No. 1 hvy. melting	\$17.00
No. 2 hvy. melting	17.00
No. 1 bales	\$16.00 to 17.00
No. 2 bales	15.50 to 16.00
No. 3 bales	8.00 to 9.00
Mach. shop turn.	7.00
No. 1 cupola cast.	19.00 to 21.00

## SEATTLE

Per gross ton delivered to consumer:  
Cast grade f.o.b. shipping point

RR. hvy. melting	\$14.50*
No. 1 & No. 2 hvy. melting	14.50*
Elec. furn 1 ft. und.	\$14.00 to 15.00
No. 1 cupola cast.	25.00*

## HAMILTON, ONT.

Per gross ton delivered to consumer:  
Cast grades f.o.b. shipping point

Heavy melting	\$17.50*
No. 1 bundles	17.50*
No. 2 bundles	17.00*
Mixed steel scrap	15.50*
Rails, remelting	18.50*
Rails, rerolling	21.50*
Bushellings	13.00*
Mixed borings & turnings	12.50*
Electric furnace bundles	20.50*
Manganese steel scrap	20.00*
No. 1 cast	19.00*
Stove plate	17.50*
Car wheels, cast	19.50*
Malleable iron	16.00*

# Comparison of Prices . .

Advances over past week in **Heavy Type**, declines in *Italics*. Prices are f.o.b. major basing points. The various basing points for finished and semifinished steel are listed in the detailed price tables.

Flat-Rolled Steel:	Oct. 8,	Oct. 1,	Sept. 3,	Oct. 9,
(cents per pound)	1946	1946	1946	1945
Hot-rolled sheets .....	2.425	2.425	2.425	2.20
Cold-rolled sheets .....	3.275	3.275	3.275	3.05
Galvanized sheets (24 ga.)	4.05	4.05	4.05	3.70
Hot-rolled strip				
6-in and under .....	2.45	2.45	2.45	2.10
Over 6 in. ....	2.35	2.35	2.35	2.10
Cold-rolled strip .....	3.05	3.05	3.05	2.80
Plates .....	2.50	2.50	2.50	2.25
Plates, wrought iron ....	4.112	4.112	4.112	3.80
Stain's c-r strip (No. 302)	30.30	30.30	30.30	28.00

Tin and Ternplate:				
(dollars per base box)				
Tinplate, standard cokes..	\$5.00	\$5.00	\$5.00	\$5.00
Tinplate, electro (0.50 lb)	4.50	4.50	4.50	4.50
Special coated mfg. ternes	4.30	4.30	4.30	4.30

Bars and Shapes:				
(cents per pound)				
Merchant bars .....	2.50	2.50	2.50	2.25
Cold-finished bars .....	3.10	3.10	3.10	2.75
Alloy bars .....	2.92	2.92	2.92	2.70
Structural shapes .....	2.35	2.35	2.35	2.10
Stainless bars (No. 302).	25.97	25.97	25.97	24.00
Wrought iron bars .....	4.76	4.76	4.76	4.40

Wire and Wire Products:				
(cents per pound)				
Bright wire .....	3.05	3.05	3.05	2.75
Wire nails .....	3.75	3.75	3.75	2.90

Rails:				
(dollars per net ton)				
Heavy rails .....	\$43.39	\$43.39	\$43.39	\$43.00*
Light rails .....	49.18	49.18	49.18	45.00*
*per gross ton				

Semifinished Steel:				
(dollars per gross ton)				
Re-rolling billets .....	\$39.00	\$39.00	\$39.00	\$36.00
Sheet bars .....	38.00	38.00	38.00	36.00
Slabs, re-rolling .....	39.00	39.00	39.00	36.00
Forging billets .....	47.00	47.00	47.00	42.00
Alloy blooms, billets, slabs	58.43	58.43	58.43	54.00

Wire Rods and Skelp:				
(cents per pound)				
Wire rods .....	2.30	2.30	2.30	2.15
Skelp .....	2.05	2.05	2.05	1.90

Pig Iron*:	Oct. 8,	Oct. 1,	Sept. 3,	Oct. 9,
(per gross ton)	1946	1946	1946	1945
No. 2 foundry, Phila....	\$30.43	\$30.43	\$30.43	\$26.84
No. 2, Valley furnace....	28.50	28.50	28.50	25.00
No. 2, Southern, Cin'ti...	27.80	27.80	27.80	25.44
No. 2, Birmingham .....	24.88	24.88	24.88	21.38
No. 2 foundry, Chicago†.	28.50	28.50	28.50	25.00
Basic, del'd eastern Pa...	29.93	29.93	29.93	26.34
Basic, Valley furnace....	28.00	28.00	28.00	24.50
Malleable, Chicago† .....	28.50	28.50	28.50	25.00
Malleable, Valley .....	28.50	28.50	28.50	25.00
L. S. charcoal, Chicago..	42.34	42.34	42.34	42.34
Ferromanganese† .....	135.00	135.00	135.00	135.00

† The switching charge for delivery to foundries in the Chicago district is 60¢ per ton.

† For carlots at seaboard.

\* Prices retroactive to May 29; the price increase should be reflected in THE IRON AGE Comparison of Prices table since June 4.

Scrap:				
(per gross ton)				
Heavy melt'g steel, P'gh.	\$20.00	\$20.00	\$20.00	\$20.00
Heavy melt'g steel, Phila.	18.75	18.75	18.75	18.75
Heavy melt'g steel, Ch'go	18.75	18.75	18.75	18.75
No. 1 hy. comp. sheet, Det.	17.32	17.32	17.32	17.32
Low phos. plate, Youngs'n	22.50	22.50	22.50	22.50
No. 1 cast, Pittsburgh...	25.00	25.00	20.00	20.00
No. 1 cast, Philadelphia..	25.00	25.00	20.00	20.00
No. 1 cast, Chicago.....	25.00	25.00	20.00	20.00

Coke, Connellsville:				
(per net ton at oven)				
Furnace coke, prompt....	\$8.75	\$8.75	\$8.75	\$7.50
Foundry coke, prompt...	8.50	8.50	8.50	9.00

Nonferrous Metals:				
(cents per pound to large buyers)				
Copper, electro., Conn....	14.375	14.375	14.375	12.00
Copper, Lake, Conn.....	14.375	14.375	14.375	12.00
Tin, Straits, New York..	52.00	52.00	52.00	52.00
Zinc, East St. Louis.....	8.25	8.25	8.25	8.25
Lead, St. Louis .....	8.10	8.10	8.10	6.35
Aluminum, virgin .....	15.00	15.00	15.00	15.00
Nickel, electrolytic .....	35.00	35.00	35.00	35.00
Magnesium, ingot .....	20.50	20.50	20.50	20.50
Antimony, Laredo, Tex...	14.50	14.50	14.50	14.50

Starting with the issue of Apr. 22, 1943, the weighted finished steel index was revised for the years 1941, 1942 and 1943. See explanation of the change on p. 90 of the Apr. 22, 1943, issue. Index revised to a quarterly basis as of Nov. 16, 1944; for details see p. 98 of that issue. The finished steel composite prices for the current quarter are an estimate based on finished steel shipments for the previous quarter. These figures will be revised when the actual data of shipments for this quarter are compiled.

# Composite Prices . .

## FINISHED STEEL

Oct. 8, 1946 .....	2.73011¢	per lb.....
One week ago.....	2.73011¢	per lb.....
One month ago.....	2.73011¢	per lb.....
One year ago.....	2.44076¢	per lb.....

HIGH		LOW	
1946....	2.73011¢ July 4	2.54490¢ Jan. 1	
1945....	2.44104¢ Oct. 2	2.38444¢ Jan. 2	
1944....	2.30837¢ Sept. 5	2.21189¢ Oct. 5	
1943....	2.29176¢	2.29176¢	
1942....	2.28249¢	2.28249¢	
1941....	2.43078¢	2.43078¢	
1940....	2.30467¢ Jan. 2	2.24107¢ Apr. 16	
1939....	2.35367¢ Jan. 3	2.26689¢ May 16	
1938....	2.58414¢ Jan. 4	2.27207¢ Oct. 18	
1937....	2.58414¢ Mar. 9	2.32263¢ Jan. 4	
1926....	2.32263¢ Dec. 28	2.05200¢ Mar. 10	
1935....	2.07642¢ Oct. 1	2.06492¢ Jan. 8	
1934....	2.15367¢ Apr. 24	1.95757¢ Jan. 2	
1933....	1.95578¢ Oct. 3	1.75836¢ May 2	
1932....	1.89196¢ July 5	1.83901¢ Mar. 1	
1931....	1.99626¢ Jan. 13	1.86586¢ Dec. 29	
1930....	2.25488¢ Jan. 7	1.97319¢ Dec. 9	
1929....	2.31773¢ May 28	2.26498¢ Oct. 29	

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strip, representing 78 pct of the United States output. Index recapitulated in Aug. 23, 1941, issue.

## PIG IRON

.....	\$28.13	per gross ton....
.....	\$28.13	per gross ton....
.....	\$28.13	per gross ton....
.....	\$24.61	per gross ton....

HIGH		LOW	
\$28.13	May 29	\$25.37	Jan. 1
25.37	Oct. 23	23.61	Jan. 2
\$23.61		\$23.61	
23.61		23.61	
23.61		23.61	
\$23.61	Mar. 20	\$23.45	Jan. 2
23.45	Dec. 23	22.61	Jan. 2
22.61	Sept. 19	20.61	Sept. 12
23.25	June 21	19.61	July 6
23.25	Mar. 9	20.25	Feb. 16
19.74	Nov. 24	18.73	Aug. 11
18.84	Nov. 5	17.83	May 14
17.90	May 1	16.90	Jan. 27
16.90	Dec. 5	13.56	Jan. 3
14.81	Jan. 5	13.56	Dec. 6
15.90	Jan. 6	14.79	Dec. 15
18.21	Jan. 7	15.90	Dec. 16
18.71	May 14	18.21	Dec. 17

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

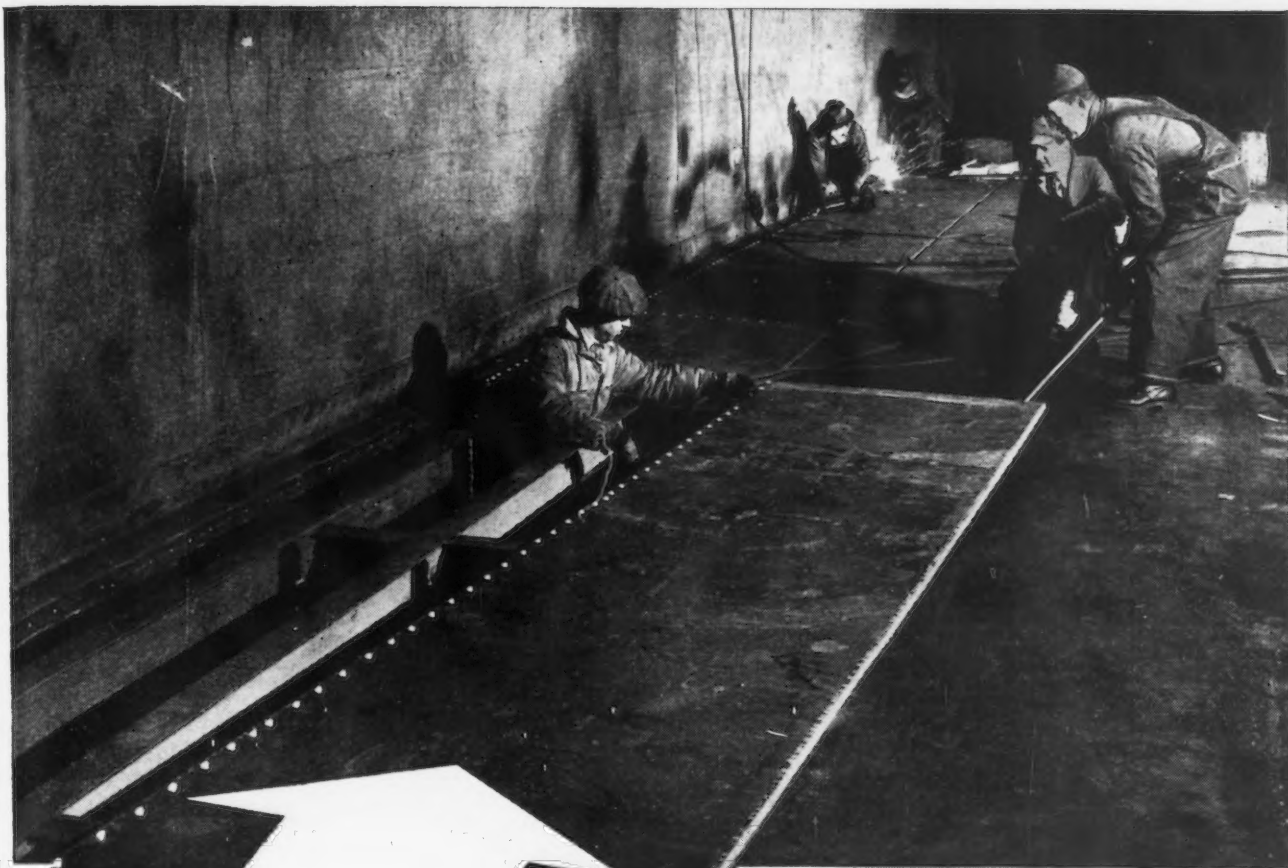
## SCRAP STEEL

.....	\$19.17	per gross ton....
.....	\$19.17	per gross ton....
.....	\$19.17	per gross ton....
.....	\$19.17	per gross ton....

HIGH		LOW	
\$19.17		\$19.17	
19.17	Jan. 11	15.76	Oct. 24
\$19.17		\$19.17	
19.17		19.17	
\$22.00	Jan. 7	\$19.17	Apr. 10
21.83	Dec. 30	16.04	Apr. 9
22.50	Oct. 3	14.08	May 15
15.00	Nov. 22	11.00	June 7
21.92	Mar. 30	12.67	June 9
17.75	Dec. 21	12.67	June 8
13.42	Dec. 10	10.33	Apr. 29
13.00	Mar. 13	9.50	Sept. 25
12.25	Aug. 8	6.75	Jan. 3
8.50	Jan. 12	6.43	July 5
11.33	Jan. 6	8.50	Dec. 29
15.00	Feb. 18	11.25	Dec. 9
17.58	Jan. 29	14.08	Dec. 3

Based on No. 1 heavy melting steel scrap quotations to consumers at Pittsburgh, Philadelphia, and Chicago.





*Cut Maintenance Costs*  
 REPLACE, REPAIR AND BUILD WITH  
**J&L OTISCOLOY STEEL**

**J&L  
 STEEL**

The Otiscology plates going into the cargo deck of this ore freighter are replacing old tank quality plates which quickly wore out from the abrasive action of ore unloaders and weight of heavy loads. Otiscology plates are designed for applications such as this for they have a high yield and tensile strength plus resistance to abrasion and corrosion. Yet Otiscology is fabricated and welded as easily as ordinary steel. Write today for Otiscology booklet.

**JONES & LAUGHLIN STEEL CORPORATION**  
 PITTSBURGH 30, PENNSYLVANIA

# Iron and Steel Prices . . .

Steel prices shown here are f.o.b. basing points, in cents per pound or dollars per gross ton. Extras apply. Delivered prices do not reflect 3 pct tax on freight. (1) Mill run sheet, 10¢ per 100 lb under base; primes, 25¢ above base. (2) Unassorted commercial coating. (3) Widths up to 12-in. inclusive. (4) 0.25 carbon and less. (5) Applies to certain width and length limitations. (6) For merchant trade. (7) For straight length material only from producer to consumer. Discount of 25¢ per 100 lb to fabricators. (8) Also shafting. For quantities of 20,000 lb to 39,999 lb. (9) Carload lot in manufacturing trade. (10) Prices do not apply if rail and water is not used. (11) Boxed. (12) This base price for annealed, bright finish wires, commercial spring wire. (13) Produced to dimensional tolerances in AISI Manual Sect. 6. (14) Billets only. (15) 9/32 in. to 47/64 in., 0.15¢ per lb higher.

Basing Points													DELIVERED TO		
	Pittsburgh	Chicago	Gary	Cleveland	Birmingham	Buffalo	Youngstown	Sparrows Point	Granite City	Middletown, Ohio	Gulf Ports, Cars	10 Pacific Ports, Cars	Detroit	New York	Philadelphia
INGOTS															
Carbon, re-rolling	(\$33.00 f. o. b. mill)														
Carbon, forging	\$38	\$38	\$38	\$38	\$38	\$38	\$38								
Alloy	\$48.69	\$48.69				\$48.69	(Bethlehem, Massillon, Canton, Coatesville=\$49.69)								
BILLETS, BLOOMS, SLABS															
Carbon, re-rolling	\$39	\$39	\$39	\$39	\$39	(Provo=\$50.20, Duluth=\$41 <sup>14</sup> ) \$39 \$39 \$39						\$51 <sup>14</sup>	\$41		
Carbon, forging billets	\$47	\$47	\$47	\$47	\$47	(Provo=\$58.20, Duluth=\$49 <sup>14</sup> ) \$47 \$47						\$59 <sup>14</sup>	\$49		
Alloy	\$58.43	\$58.43				\$58.43	(Bethlehem, Massillon, Canton=\$58.43)						\$60.43		
SHEET BARS	\$38	\$38		\$38		\$38	\$38	\$38	(Canton=\$38)						
PIPE SKELP	2.05¢	2.05¢					2.05¢	2.05¢	(Coatesville=2.05¢)						
WIRE RODS <sup>15</sup> No. 5 to 9/32 in.	2.30¢	2.30¢		2.30¢	2.30¢	(Worcester=2.40¢)					2.55¢	2.80¢			
SHEETS															
Hot-rolled	2.425¢	2.425¢	2.425¢	2.425¢	2.425¢	2.425¢	2.425¢	2.425¢	2.875¢	2.425¢		2.975¢	2.625¢	2.685¢	2.615¢
Cold-rolled <sup>1</sup>	3.275¢	3.275¢	3.275¢	3.275¢		3.275¢	3.275¢		3.375¢	3.275¢		3.925¢	3.375¢	3.615¢	3.635¢
Galvanized (24 gage)	4.05¢	4.05¢	4.05¢		4.05¢	4.05¢	4.05¢	4.05¢	4.50¢	4.05¢		4.60¢		4.31¢	4.24¢
Enameling (20 gage)	3.80¢	3.80¢	3.80¢	3.80¢			3.80¢		3.90¢	3.80¢		4.45¢	3.90¢	4.20¢	4.16¢
Enameling (10 Gage)	3.20¢	3.20¢	3.20¢	3.20¢			3.20¢		3.30¢	3.20¢		3.85¢	3.30¢	3.60¢	3.56¢
Long ternes <sup>2</sup>	4.05¢	4.05¢	4.05¢									4.80¢		4.45¢	4.41¢
STRIP															
Hot-rolled <sup>3</sup> 6 in. and under over 6 in.	2.45¢ 2.35¢	2.45¢ 2.35¢	2.45¢ 2.35¢	2.45¢ 2.35¢	2.45¢ 2.35¢		2.45¢ 2.35¢			2.45¢ 2.35¢		3.10¢ 3.00¢	2.55¢ 2.45¢	2.85¢ 2.75¢	2.81¢ 2.71¢
Cold-rolled <sup>4</sup>	3.05¢	3.15¢		3.05¢			3.05¢	(Worcester=3.25¢)					3.15¢	3.45¢	3.41¢
Cooperage stock	2.55¢	2.55¢			2.55¢		2.55¢							2.95¢	
TINPLATE															
Standard cokes, base box	\$5.00	\$5.00	\$5.00		\$5.10			\$5.10	\$5.10					\$5.375	\$5.301
Electro, box (0.25 lb 0.50 lb 0.75 lb)	\$4.35 \$4.50 \$4.65	\$4.35 \$4.50 \$4.65	\$4.35 \$4.50 \$4.65					\$4.35 \$4.60 \$4.75	\$4.60 \$4.75						
BLACKPLATE 29 gage <sup>5</sup>	3.30¢	3.30¢	3.30¢					3.40¢	3.40¢					3.67¢	3.59¢
TERNES, MFG.															
Special coated, base box	\$4.30	\$4.30	\$4.30					\$4.40	\$4.40						
BARS															
Carbon steel	2.50¢	2.50¢	2.50¢	2.50¢	2.50¢	2.50¢	2.50¢	(Duluth=2.60¢) (Provo, Utah=3.20¢)			2.85¢	3.15¢	2.60¢	2.84¢	2.86¢
Rail steel <sup>6</sup>	2.50¢	2.50¢	2.50¢	2.50¢	2.50¢	2.50¢					2.85¢	3.15¢			
Reinforcing (billet) <sup>7</sup>	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢		2.70¢	2.75¢	2.45¢	2.61¢	2.69¢
Reinforcing (rail) <sup>7</sup>	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢				2.70¢	2.75¢	2.45¢		
Cold-finished <sup>8</sup>	3.10¢	3.10¢	3.10¢	3.10¢		3.10¢	(Detroit=3.15¢) (Toledo=3.25¢)						3.44¢	3.46¢	
Alloy, hot-rolled	2.92¢	2.92¢				2.92¢	2.92¢	(Bethlehem, Massillon, Canton=2.92¢)				3.02¢			
Alloy, cold-drawn	3.62¢	3.62¢	3.62¢	3.62¢		3.62¢							3.73¢		
PLATE															
Carbon steel <sup>13</sup>	2.50¢	2.50¢	2.50¢	2.50¢	2.50¢		2.50¢	(Coatesville and Claymont=2.50¢, Provo, Utah=3.20¢) 2.50¢					2.85¢	3.05¢	2.72¢
Floor plates	3.75¢	3.75¢									4.10¢	4.40¢		4.15¢	4.15¢
Alloy	3.79¢	3.79¢				(Coatesville=3.79¢)						4.27¢	4.49¢	4.01¢	3.895¢
SHAPES															
Structural	2.35¢	2.35¢	2.35¢		2.35¢	2.35¢	(Bethlehem=2.35¢)				2.70¢	3.00¢		2.54¢	2.49¢
SPRING STEEL, C-R															
0.26 to 0.50 carbon	3.05¢			3.05¢			(Worcester=3.25¢)								
0.51 to 0.75 carbon	4.65¢			4.65¢			(Worcester=4.85¢)								
0.76 to 1.00 carbon	6.65¢			6.65¢			(Worcester=6.85¢)								
1.01 to 1.25 carbon	9.03¢			9.03¢			(Worcester=9.23¢)								
WIRE															
Bright <sup>12</sup>	3.05¢	3.05¢		3.05¢	3.05¢		(Worcester=3.15¢) (Duluth=3.10¢)				3.55¢		3.44¢	3.41¢	
Galvanized						Add proper size extra and galvanizing extra to Bright Wire Base									
Spring (high carbon)	4.00¢	4.00¢		4.00¢			(Worcester=4.10¢) (Trenton=4.25¢)				4.50¢		4.39¢	4.339¢	
PILING															
Steel sheet	2.65¢	2.65¢				2.65¢						3.20¢		2.99¢	3.01¢



# PRICES

## CORROSION AND HEAT RESISTANT STEELS

In cents per pound, f.o.b. basing point

BASING POINT	Chromium Nickel		Straight Chromium			
	No. 304	No. 302	No. 410	No. 430	No. 442	No. 446
Ingot, P'gh, Chi, Canton, Balt, Reading, Ft. Wayne, Phila.....	Subject to negotiation		Subject to negotiation			
Blooms, P'gh, Chi, Canton, Phila, Reading, Ft. Wayne, Balt.....	22.99	24.67	17.01	17.47	20.69	25.29
Slabs, P'gh, Chi, Canton, Balt, Phila, Reading.....	22.99	24.67	17.01	17.47	20.69	25.29
Billets, P'gh, Chi, Canton, Watervliet, Syracuse, Balt.....	Subject to negotiation		Subject to negotiation			
Billets, forging, P'gh, Chi, Canton, Dunkirk, Balt, Phila, Reading, Watervliet, Syracuse, Ft. Wayne, Titusville.....	22.99	24.67	17.01	17.47	20.69	25.29
Bars, h-r, P'gh, Chi, Canton, Dunkirk, Watervliet, Syracuse, Balt, Phila, Reading, Ft. Wayne, Titusville.....	27.05	25.97	20.02	20.58	24.34	29.75
Bars, c-r, P'gh, Chi, Cleve, Canton, Dunkirk, Syracuse, Balt, Phila, Reading, Ft. Wayne, Watervliet.....	27.05	25.97	20.02	20.58	24.34	29.75
Plates, P'gh, Middletown, Canton.....	31.38	29.21	23.28	23.80	28.67	33.00
Shapes, structural, P'gh, Chi.....	27.05	25.97	20.02	20.58	24.34	29.75
Sheets, P'gh, Chi, Middletown, Canton, Balt.....	38.95	36.79	28.67	31.38	35.16	38.49
Strip, h-r, P'gh, Chi, Reading, Canton, Youngstown.....	25.43	23.28	18.39	18.93	25.97	37.67
Strip, c-r, P'gh, Cleve, Newark, N. J., Reading, Canton, Youngstown.....	32.46	30.30	23.80	24.34	34.62	56.26
Wire, c-d, Cleve, Dunkirk, Syracuse, Balt, Reading, Canton, P'gh, Newark, N. J., Phila.....	27.05	25.97	20.02	20.58	24.34	29.75
Wire, flat, c-r, Cleve, Balt, Reading, Dunkirk, Canton.....	32.46	30.30	23.80	24.34	34.62	56.26
Rod, h-r, Syracuse.....	27.05	25.97	20.02	20.58	24.34	29.75
Tubing, seamless, P'gh, Chi, Canton, (4 in. to 6 in.).....	72.09	72.09	.....	68.49	.....	.....

## TOOL STEEL

(F.o.b. Pittsburgh, Bethlehem, Syracuse, Dunkirk. \*Also Canton, O.)

An increase of 8.2 pct applies to base price and extras

	Base per lb
High speed .....	67¢
Straight molybdenum .....	54¢
Tungsten-molybdenum .....	57½¢
High-carbon-chromium* .....	43¢
Oil hardening* .....	24¢
Special carbon* .....	22¢
Extra carbon* .....	18¢
Regular carbon* .....	14¢
Warehouse prices on and east of Mississippi are 2¢ per lb higher; west of Mississippi 3¢ higher.	

## ELECTRICAL SHEETS

Base, all grades f.o.b. Pittsburgh

	per lb
Field grade .....	3.90¢
Armature .....	4.25¢
Electrical .....	4.75¢
Motor .....	5.425¢
Dynamo .....	6.125¢
Transformer 72 .....	6.625¢
Transformer 65 .....	7.625¢
Transformer 58 .....	8.125¢
Transformer 52 .....	8.925¢

F.o.b. Chicago and Gary, field grade through motor; f.o.b. Granite City, add 10¢ per 100 lb on field grade to and including dynamo. Pacific ports add 75¢ per 100 lb on all grades.

## RAILS, TRACK SUPPLIES

(F.o.b. mill)

Standard rails, heavier than 60 lb No. 1 O.H., net ton .....	\$43.39
Angle splice bars, 100 lb .....	2.85
(F.o.b. basing points) per net ton	
Light rails (from billets) .....	\$49.18
Light rails (from rail steel) .....	49.18
base per lb	
Cut spikes .....	3.65¢
Screw spikes .....	*5.15¢
Tie plate, steel .....	2.55¢
Tie plates, Pacific Coast .....	2.70¢
Track bolts .....	6.50¢
Track bolts, heat treated, to rail-roads .....	6.75¢
Track bolts, jobbers discount .....	63-5

\*Plus 12 pct.  
Basing points, light rails, Pittsburgh, Chicago, Birmingham; cut spikes and tie plates—Pittsburgh, Chicago, Portsmouth, Ohio, Welton, W. Va., St. Louis, Kansas City, Minnequa, Colo., Birmingham and Pacific Coast ports; tie plates alone—Steelton, Pa., Buffalo. Cut spikes alone—Youngstown, Lebanon, Pa., Richmond, Oregon and Washington ports, add 25¢.

## ROOFING TERNEPLATE

(F.o.b. Pittsburgh, 112 sheets)

	20x14 in.	20x28 in.
8-lb coating I.C.....	\$8.50	\$17.00
15-lb coating I.C.....	9.50	19.00
20-lb coating I.C.....	10.00	20.00

## CLAD STEEL

Base prices, cents per pound

	Plate	Sheet
Stainless-clad		
No. 304, 20 pct. f.o.b. Pittsburgh, Washington, Pa. ....	21.00*	22.00
Nickel-clad		
10 pct. f.o.b. Coatesville, Pa. ....	18.72	....
Inconel-clad		
10 pct. f.o.b. Coatesville..	26.00	....
Monel-clad		
10 pct. f.o.b. Coatesville..	24.96	....
Aluminized steel		
Hot dip, 20 gage, f.o.b. Pittsburgh .....	9.00	....

\*Includes annealing and pickling.

## WIRE PRODUCTS

To the dealer, f.o.b. Pittsburgh, Chicago, Cleveland, Birmingham, Duluth

	Basing Points	Pacific Coast Basing Points†
base per keg		
Standard wire nails .....	\$3.75	\$4.25
Coated nails .....	3.75	4.25
Cut nails, carloads .....	4.85	.....
base per 100 lb		
Annealed fence wire .....	\$3.50	\$4.00
Annealed galv. fence wire .....	3.85	4.35
base column		
Woven wire fence* .....	72	90
Fence posts, carloads... ..	74	91
Single loop bale ties†† .....	72	97
Galvanized barbed wire** .....	79	89
Twisted barless wire .....	79	89

\*15½ gage and heavier. \*\*On 80-rod spools in carload quantities.

†Prices subject to switching or transportation charges.

††Add 50¢ a ton.

## HIGH TENSILE, LOW ALLOY STEELS

base prices, cents per pound

Steel	Aldecor	Corten	Double Strength No. 1	Dynalloy	Hi Steel	Mayari R	Otiscoloy	Yoloy	Y-50
Producer	Republic	Carnegie-Illinois, Republic	Republic	Alan Wood	Inland	Bethlehem	Jones & Laughlin	Youngstown Sheet & Tube	American Rolling Mill
Plates.....	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	....
Sheets									
Hot-rolled....	3.575	3.575	3.575	3.575	3.575	3.575	3.575	3.575	....
Cold-rolled....	4.525	4.525	4.525	....	4.525	4.525	4.525	4.525	5.225*
Galvanized....	....	....	....	....	....	5.50	....	....	....
Strip									
Hot-rolled									
Over 6-in. ....	3.60	3.60	3.60	....	3.60	3.60	3.60	3.60	....
6-in. & under .....	3.70	3.70	3.70	....	3.70	3.70	3.70	3.70	....
Cold-rolled .....	4.30	....	4.30	....	4.40	....	4.30	4.30	5.00*
Commodity .....	....	....	....	....	....	....	4.45	....	....
Shapes .....	....	3.45	....	....	3.45	3.45	3.45	3.45	....
Beams .....	....	3.45	....	....	....	3.45	....	....	....
Bars									
Hot-rolled....	3.70	3.70	3.70	....	....	3.70	3.70	3.732††	....
Cold rolled....	....	....	....	....	....	....	....	4.382††	....
Bar sh pes.....	....	3.85	....	....	3.85	3.85	3.85	3.85	....
Billets, blooms, slabs (per gross ton)									
Structural....	....	....	....	....	....	....	....	\$74.65†	....
Forging.....	....	....	....	....	....	....	....	\$82.23†	....

\* 21 gage and lighter. † Alloy extras apply. ‡ Add 0.379¢ for forging or heat treating grade.

# PRICES

## WELDED PIPE AND TUBING

Base discounts, f.o.b. Pittsburgh district and Lorain, Ohio, mills

(F.o.b. Pittsburgh only on wrought pipe)  
Base price—\$200.00 per net ton

### Steel (buttweld)

	Black	Galv.
1/4-in. ....	60 1/2	48
3/4-in. ....	63 1/2	52
1-in. to 3-in. ....	65 1/2	54 1/2

### Wrought Iron (buttweld)

1/4-in. ....	17 7/8	+4 1/2
3/4-in. ....	24 1/4	2 1/2
1-in. and 1 1/4-in. ....	28 3/4	9 1/2
1 1/2-in. ....	33	11 1/2
2-in. ....	32 3/4	11 1/2

### Steel (lapweld)

2-in. ....	58	46 1/2
2 1/2-in. and 3-in. ....	61	49 1/2
3 1/2-in. to 6-in. ....	63	51 1/2

### Wrought Iron (lapweld)

2-in. ....	24 3/4	4 7/8
2 1/2-in. to 3 1/2-in. ....	25 1/4	7 1/2
4-in. ....	28 1/2	11 1/2
4 1/2-in. to 8-in. ....	27	10 1/2

### Steel (butt, extra strong, plain ends)

1/4-in. ....	58 1/2	47 1/2
3/4-in. ....	62 1/2	51 1/2
1-in. to 3-in. ....	64	54

### Wrought Iron (same as above)

1/4-in. ....	18 3/4	+1 1/2
3/4-in. ....	25 1/4	4 1/2
1-in. to 2-in. ....	33	13

### Steel (lap, extra strong, plain ends)

2-in. ....	56	45 1/2
2 1/2-in. and 3-in. ....	60	49 1/2
3 1/2-in. to 6-in. ....	63 1/2	53

### Wrought Iron (same as above)

2-in. ....	28 1/2	8 3/4
2 1/2-in. to 4-in. ....	34	16 1/4
4 1/2-in. to 6-in. ....	32 1/2	14 1/2

On buttweld and lapweld steel pipe jobbers are granted a discount of 5 pct. On l.c.l. shipments prices are determined by adding 25 pct and 30 pct and the carload freight rate to the base card.

F.o.b. Gary prices are two points lower discount or \$4 a ton higher than Pittsburgh or Lorain on lapweld and one point lower discount, or \$2 a ton higher on all buttweld

## BOILER TUBES

Seamless steel and lapweld commercial boiler tubes and locomotive tubes, minimum wall. Net base prices per 100 ft f.o.b. Pittsburgh, in carload lots

	Seamless	Lapweld, Cold-Hot-Drawn Rolled
2 in. O.D. 13 B.W.G. ....	16.52	13.90
2 1/2 in. O.D. 12 B.W.G. ....	22.21	18.70
3 in. O.D. 12 B.W.G. ....	24.71	20.79
3 1/2 in. O.D. 11 B.W.G. ....	31.18	26.25
4 in. O.D. 10 B.W.G. ....	38.68	32.56

(Extras for less carload quantities)

	Base	5 pct	10 pct	20 pct	30 pct	45 pct	65 pct
40,000 lb or ft and over ....	Base						
30,000 lb or ft to 39,999 lb or ft. ....	5 pct						
20,000 lb or ft to 29,999 lb or ft. ....	10 pct						
10,000 lb or ft to 19,999 lb or ft. ....	20 pct						
5,000 lb or ft to 9,999 lb or ft. ....	30 pct						
2,000 lb or ft to 4,999 lb or ft. ....	45 pct						
Under 2,000 lb or ft. ....	65 pct						

## CAST IRON WATER PIPE

	Per net ton
6-in. to 24-in., del'd Chicago. ....	\$70.33
6-in. to 24-in., del'd New York. ....	69.60
6-in. to 24-in., Birmingham. ....	61.00
6-in. and larger, f.o.b. cars, San Francisco, Los Angeles or Seattle for all rail shipment; rail and water shipment less ....	84.40
Class "A" and gas pipe, \$5 extra: 4-in. pipe is \$5 a ton above 6-in. ....	

134—THE IRON AGE, October 10, 1946

## BOLTS, NUTS, RIVETS, SET SCREWS

An increase of 12 pct applies to listings except Large Rivets

### Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

### Machine and Carriage Bolts

Base discount less case lots

	Percent Off List
1/2 in. & smaller x 6 in. & shorter. ....	65 1/2
9/16 & 5/8 in. x 6 in. & shorter. ....	63 1/2
3/4 to 1 in. x 6 in. & shorter. ....	61
1 1/4 in. and larger, all lengths. ....	59
All diameters over 6 in. long. ....	59
Lag, all sizes. ....	62
Plow bolts. ....	65

### Nuts, Cold Punched or Hot Pressed

(Hexagon or Square)

1/2 in. and smaller. ....	62
9/16 to 1 in. inclusive. ....	59
1 1/4 to 1 1/2 in. inclusive. ....	57
1 1/2 in. and larger. ....	56

On above bolts and nuts, excepting plow bolts, additional allowance of 10 pct for full container quantities. There is an additional 5 pct allowance for carload shipments.

### Semifin. Hexagon Nuts U.S.S. S.A.E.

Base discount less keg lots

7/16 in. and smaller. ....	62	64
1/2 in. and smaller. ....	62	
3/4 in. through 1 in. ....	59	60
9/16 in. through 1 in. ....	57	58
1 1/4 in. through 1 1/2 in. ....	56	
1 1/2 in. and larger. ....	56	

In full keg lots, 10 pct additional discount. For 200 lb or more, freight allowed up to 50¢ per 100 lb, based on Cleveland, Chicago, Pittsburgh.

### Stove Bolts

	Consumer
Packages, nuts loose. ....	71 and 10
In packages. ....	71
In bulk. ....	80
On stove bolts freight allowed up to 65¢ per 100 lb based on Cleveland, Chicago, New York on lots of 200 lb or over.	

### Large Rivets

(1/2 in. and larger)

	Base per 100 Lb
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham. ....	\$4.75
F.o.b. Lebanon, Pa. ....	4.90

### Small Rivets

(7/16 in. and smaller)

	Percent Off List
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham. ....	65 and 5

### Cap and Set Screws

(In packages)

	Consumer
Upset full fin, hexagon head cap screws, coarse or fine thread, up to and incl. 1 in. x 6 in. ....	64
Upset set screws, cup and oval points. ....	71
Milled studs. ....	46
Flat head cap screws, listed sizes. ....	36
Fillister head cap, listed sizes. ....	51
Freight allowed up to 65¢ per 100 lb based on Cleveland, Chicago or New York on lots of 200 lb or over.	

## FLUORSPAR

Maximum price f.o.b. consumer's plant, \$30 per short ton plus either (1) rail freight from producer to consumer, or (2) rail freight from Rosiclare, Ill., to consumer, whichever is lower.

	Base price per short ton
Effective CaF <sub>2</sub> Content: 70% or more. ....	\$33.00
65% but less than 70%. ....	32.00
60% but less than 65%. ....	31.00
Less than 60%. ....	30.00

## LAKE SUPERIOR ORES

(51.50% Fe, Natural Content, Delivered Lower Lake Ports)

	Per Gross Ton
Old range, bessemer. ....	\$5.45
Old range, non-bessemer. ....	5.30
Mesaba, bessemer. ....	5.20
Mesaba, non-bessemer. ....	5.05
High phosphorus. ....	5.05

Prices are for ore shipped on and after June 24, 1946, and for ore covered by adjustable pricing agreements authorized by Order No. 8, RMPR 113.

These prices do not reflect the recent ICC increase in freight rates.

## METAL POWDERS

Prices in cents per pound in ton lots, f.o.b. shipping point.

Brass, minus 100 mesh. ....	19 1/4¢ to 21 1/4¢
Copper, electrolytic, 100 mesh. ....	375
Copper, reduced, 150 mesh. ....	23 1/2¢ to 27 1/2¢
Copper, reduced, 150 and 200 mesh. ....	22 1/2¢
Iron, commercial, 100, 200, 325, mesh 96 + % Fe. ....	11¢ to 16¢
Swedish sponge iron, 100 mesh, c.l.f. N. Y., carlots, ocean bags. ....	7.4¢ to 8¢
Iron, crushed, 200 mesh and finer, 90 + % Fe carload lots. ....	4¢
Iron, hydrogen reduced, 300 mesh and finer, 98 + % Fe, drum lots. ....	63¢
Iron, electrolytic, unannealed, 325 mesh and coarser, 99 + % Fe 25¢ to 31¢	
Iron, electrolytic, annealed minus 100 mesh, 99 + % Fe. ....	17¢
Iron carbonyl, 300 mesh and finer, 98-99.8 + % Fe. ....	90¢ to \$1.75
Aluminum, 100, 200 mesh, carlots. ....	35¢
Antimony, 100 mesh. ....	30¢
Cadmium, 100 mesh. ....	\$1.75
Chromium, 100 mesh and finer. ....	\$1.25
Lead, 100, 200 & 300 mesh. ....	13 1/4¢ to 16¢
Manganese, minus 325 mesh and coarser. ....	44¢ to 61¢
Nickel, 150 mesh. ....	61 1/2¢
Silicon, minus 325 mesh and coarser. ....	26¢ to 56¢
Solder powder, 100 mesh. ....	8 1/2¢ plus metal
Tin, 100 mesh. ....	58¢
Tungsten metal powder, 98% 99%, any quantity, per lb. ....	\$2.60
Molybdenum powder, 99%, in 100-lb kegs, f.o.b. York, Pa., per lb. ....	\$2.65
Under 100 lb. ....	\$2.90

## COKE

	Net Ton
Furnace, beehive (f.o.b. oven)	
Connellsville, Pa. ....	\$8.75
Connellsville, Pa., hand drawn. ....	9.35
Foundry, beehive (f.o.b. oven)	
Fayette Co., W. Va. ....	8.10
Connellsville, Pa. ....	8.50

Foundry, Byproduct	
Chicago, del'd. ....	15.10
Chicago, f.o.b. ....	14.35
New England, del'd. ....	16.04
Kearny, N. J., f.o.b. ....	14.40
Philadelphia, del'd. ....	14.63
Buffalo, del'd. ....	14.75
Portsmouth, Ohio, f.o.b. ....	12.85
Painesville, Ohio, f.o.b. ....	13.50
Erie, del'd. ....	14.50
Cleveland, del'd. ....	14.55
Cincinnati, del'd. ....	14.60
St. Louis, del'd. ....	15.10†
Birmingham, del'd. ....	12.35

†Except producers situated in states other than Missouri, Alabama or Tennessee, sellers may charge a maximum delivered price of \$15.60 in the St. Louis Mo., and East St. Louis, Ill., switching districts.

## REFRACTORIES

(F.o.b. Works)

	Carloads Per 1000
Super-duty brick, St. Louis. ....	\$81.00
First quality, Pa., Md., Ky., Mo., Ill., Ohio. ....	65.00
First quality, New Jersey. ....	70.00
Sec. quality, Pa., Md., Ky., Mo., Ill. ....	59.00
Sec. quality, New Jersey. ....	62.00
Sec. quality, Ohio. ....	51.00
Ground fire clay, net ton, bulk. ....	9.50

Silica Brick	
Pennsylvania and Birmingham. ....	\$65.00
Chicago District. ....	74.00
Silica cement, net ton (Eastern). ....	11.50
Chicago. ....	12.50

	Per Net Ton
Chrome Brick	
Standard chemically bonded, Balt., Plymouth Meeting, Chester. ....	\$54.00

Magnesite Brick	
Standard, Balt. and Chester. ....	\$76.00
Chemically bonded, Baltimore. ....	65.00

Grain Magnesite	
Domestic, f.o.b. Balt. and Chester in sacks. ....	\$44.50
Domestic, f.o.b. Chewelah, Wash., in bulk. ....	32.00
in sacks. ....	26.00
Clinker (dead burned) dolomite, bulk, per net ton, f.o.b. York, Pa. ....	10.05



# PRICES

## WAREHOUSE PRICES

Delivered metropolitan areas, per 100 lb.

Cities	SHEETS			STRIP			Plates ¼ in. and heavier	Structural Shapes	BARS		ALLOY BARS			
	Hot- Rolled (10 gage)	Cold- Rolled	Galvanized (24 gage)	Hot-Rolled		Cold- Rolled			Hot- Rolled	Cold- Finished	Hot- Rolled, A-8617-20	Hot- Rolled, A-8742-50 Ann.	Cold- Drawn, A-8617-20	Cold- Drawn A-8742-50 Ann.
				6 in. and Under	Over 6 in.									
**Philadelphia.....	\$3.774	\$5.139	\$5.249*	\$4.314	\$4.214	\$5.064	\$3.875	\$3.937	\$4.114	\$4.564	\$6.287	\$7.387	\$7.684	\$8.764
New York.....	3.856	4.869	5.501	4.375	4.275	5.075	4.049	4.038	4.134	4.584	6.338	7.438	7.684	8.784
Boston.....	4.05	5.031	5.725	4.518	4.418	4.985	4.203	4.023	4.356	4.656	6.503	7.603	7.756	8.856
Baltimore.....	3.64	5.118	5.365	4.293	4.193	.....	3.885	4.05	4.093	4.543	.....	.....	.....	.....
Norfolk.....	4.037	.....	5.882	4.577	4.477	.....	4.262	4.303	4.377	4.677	.....	.....	.....	.....
Chicago.....	.....	.....	.....	.....	.....	4.90*	.....	.....	.....	4.20	.....	6.90	.....	.....
Milwaukee.....	3.633	4.583	5.558	4.108	4.008	5.058*	3.958	3.958	3.908	4.358	6.308	7.408	7.458	8.558
Cleveland.....	3.575	.....	5.347	3.95	3.85	.....	3.65	3.88	3.60	4.20	6.277	7.377	7.20	8.30
Buffalo.....	3.575	4.625	5.20	4.211	4.111	4.961	3.921	3.65	3.60	4.20	6.05	7.15	7.20	8.30
Detroit.....	3.675	4.725	5.491	4.05	3.95	.....	3.900	3.952	3.70	4.25	6.421	7.521	7.55	8.65
Cincinnati.....	3.671	4.721	5.296	4.046	3.946	5.002	3.952	3.983	3.902	4.502	6.441	7.541	7.602	8.702
St. Louis.....	3.643	4.593	5.622	4.118	4.018	5.222	3.968	3.968	3.918	4.522	6.472	7.572	7.622	8.722
Pittsburgh.....	3.578	4.625	.....	3.95	3.85	.....	3.65	3.65	3.60	4.20	6.05	7.15	7.20	8.30
St. Paul.....	3.817	4.767	5.666	4.292	4.192	5.000	4.142	4.142	4.092	4.852	.....	6.322	7.952	8.052
Duluth.....	3.817	4.767	5.666	4.292	4.192	.....	4.142	4.142	4.092	.....	6.472	6.572	.....	.....
Omaha.....	4.045	5.72	6.00	4.52	4.42	.....	4.37	4.37	4.32	4.945	.....	.....	.....	.....
Indianapolis.....	3.775	4.825	5.40	4.15	4.05	5.03	3.92	3.92	3.87	4.47	6.17	.....	7.32	.....
Birmingham.....	3.675	.....	5.20	4.05	3.95	.....	3.80	3.80	3.75	4.954	6.414	7.514	7.564	8.614
Memphis.....	4.221	.....	5.746	4.596	4.496	.....	4.346	4.346	4.296	4.821	.....	.....	.....	.....
New Orleans.....	4.324*	5.365 <sup>1</sup>	5.849	4.699	4.599	.....	4.449	4.449*	4.399*	5.14	.....	.....	.....	.....
Los Angeles.....	4.85	6.60 <sup>1</sup>	8.55	5.30	5.20	.....	4.80	4.70	4.65	6.03	.....	.....	.....	.....
San Francisco.....	4.40	6.00	8.55	4.85	4.75	.....	4.50	4.35	4.40	5.78	.....	.....	.....	.....
Seattle.....	4.87 <sup>5</sup>	7.27 <sup>2</sup>	6.40	4.60	4.50	.....	5.00 <sup>5</sup>	4.70 <sup>5</sup>	4.60 <sup>5</sup>	6.23	7.70*	8.70*	.....	9.55*
Portland.....	4.87 <sup>4</sup>	.....	6.20	5.10	.....	.....	5.00 <sup>4</sup>	4.70 <sup>4</sup>	4.70 <sup>4</sup>	5.98	7.70	8.85	.....	.....
Salt Lake City.....	4.81	.....	6.70	5.94	5.84	.....	5.29	5.29	5.19	6.49	.....	.....	.....	.....

## BASE QUANTITIES

Standard unless otherwise keyed on prices.

**HOT-ROLLED:** Sheets, strip, plates, shapes and bars, 400 to 1999 lb.

**COLD-ROLLED:** Sheets, 400 to 1999 lb; strip, extras on all quantities; bars, 1500 lb base.

**ALLOY BARS:** 1000 to 39,999 lb.

**GALVANIZED SHEETS:** 450 to 1499 lb.

**EXCEPTIONS:** (1) 400 to 1499 lb; (2) 450 to 1499 lb; (3) 450 to 3749 lb; (4) 300 to 4999 lb; (5) 300 to 10,000 lb; (6) 2000 lb and over; (7) 3500 lb and over; (8) 1000 lb and over.

(\*) Philadelphia: Galvanized sheet, 25 or more bundles.

Extra for size, quality, etc., apply on above quotations.

\* Add 29.1¢ for sizes not rolled in Birmingham.

\*\* City of Philadelphia only. Applicable freight rates must be added to basing point prices to obtain delivered price to other localities in metropolitan area.

## PIG IRON PRICES

Per gross ton, retroactive to May 29.

BASING POINT PRICES						DELIVERED PRICES (BASE GRADES)							
Basing Point	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.	Consuming Point	Basing Point	Freight Rate	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Bethlehem	29.00	29.50	30.00	30.50		Boston	Everett	\$0.50 Arb.	29.50	30.00	30.50	31.00	
Birdsboro	29.00	29.50	30.00	30.50	34.00	Boston	Birdsboro-Steelton	4.47					38.47
Birmingham	23.50*	24.88*		29.50		Brooklyn	Bethlehem	2.78	31.78	32.28	32.78	33.28	
Buffalo	27.50	28.50	29.00	29.50	34.00	Brooklyn	Birdsboro	3.26					37.26
Chicago	28.00	28.50	28.50	29.00		Canton	Clev. Ygstin, Sharpvil.	1.54	29.54	30.04	30.04	30.54	
Cleveland	28.00	28.50	28.50	29.00		Canton	Buffalo	3.55					37.55
Detroit	28.00	28.50	28.50	29.00		Cincinnati	Birmingham	4.30	27.80*	29.18*			
Duluth	28.50	29.00	29.00	29.50		Cincinnati	Hamilton	1.24			29.74		
Erie	28.00	28.50	29.00	29.50		Cincinnati	Buffalo	4.89					38.89
Everett	29.00	29.50	30.00	30.50		Jersey City	Bethlehem	1.70	30.70	31.20	31.70	32.20	
Granite City	28.00	28.50	28.50	29.00		Jersey City	Birdsboro	2.16					36.16
Hamilton	28.00	28.50	28.50			Los Angeles	Provo	5.25	31.25	31.75			
Neville Island	28.00	28.50	28.50	29.00		Los Angeles	Buffalo	16.33					50.33
Provo	26.00	26.50				Mansfield	Cleveland-Toledo	2.16	30.16	30.66	30.66	31.16	
Sharpsville	28.00	28.50	28.50	29.00		Mansfield	Buffalo	3.74					37.74
Sparrows Point	29.00	29.50				Philadelphia	Swedeland	0.93	29.93	30.43	30.93	31.43	
Steelton	29.00				34.00	Philadelphia	Birdsboro	1.38					35.38
Swedeland	29.00	29.50	30.00	30.50		San Francisco	Provo	5.25	31.25	31.75			
Toledo	28.00	28.50	28.50	29.00		San Francisco	Buffalo	16.33					50.33
Youngstown¹	28.00	28.50	28.50	29.00		Seattle	Provo	5.25	31.25	31.75			
						Seattle	Buffalo	16.33					50.33
						St. Louis	Granite City	0.50 Arb.	28.50	29.00	29.00	29.50	
						St. Louis	Buffalo	7.86					41.80

\* Republic Steel Corp. has been granted a \$2 increase on basic and foundry pig iron produced at Birmingham.

(1) Struthers Iron & Steel Co., Struthers, Ohio, may charge 50¢ per ton in excess of basing point prices for No. 2 foundry, basic, bessemer and malleable.

Charcoal pig iron base prices for Lyles, Tenn., and Lake Superior furnaces, \$33.00 and \$34.00, respectively. Newberry Brand of Lake Superior charcoal iron \$39.00 per g.t., f.o.b. furnace. Delivered to Chicago, \$42.34.

High phosphorus iron sells at Lyles, Tenn., at \$28.50.

Basing point prices are subject to switching charges; silicon differentials (not to exceed 50¢ per ton for each 0.25 pct silicon content in excess of base grade which is 1.75 to 2.25 pct); phosphorus differentials, a reduction of 38¢ per ton for phosphorus content of 0.70 pct and over; manganese differentials, a charge not to exceed 50¢ per ton for each

0.50 pct manganese content in excess of 1.00 pct. \$2 per ton extra may be charged for 0.5 to 0.75 pct nickel content and \$1 per ton extra for each additional 0.25 pct nickel.

Silvery iron, silicon 6.00 to 6.50 pct, C/L per g.t., f.o.b. Jackson, Ohio—\$34.00; f.o.b. Buffalo—\$35.25. Add \$1.00 per ton for each additional 0.50 pct Si. Add 50¢ per ton for each 0.50 pct Mn over 1.00 pct. Add \$1.00 per ton for prices of comparable analysis.

# FERROALLOY PRICES

## Ferromanganese

78-82% Mn, maximum contract base price, gross ton, lump size, f.o.b. Baltimore, Philadelphia, New York, Birmingham, Rockdale, Rockwood, Tenn.  
 Carload lots (bulk) ..... \$135.00  
 Less ton lots (packed) ..... 148.50  
 F.o.b. Pittsburgh ..... 139.50  
 \$1.70 for each 1% above 82% Mn; penalty, \$1.70 for each 1% below 78%.  
 Briquets—cents per pound of briquet, freight allowed, 66% contained Mn.  
 Eastern Central Western  
 Carload, bulk .. 6.05 6.30 6.60  
 Ton lots ..... 6.65 7.55 8.55  
 Less ton lots ... 6.80 7.80 8.80

## Spiegeleisen

Contract prices, gross ton, lump, f.o.b. Palmerton, Pa.  
 16-19% Mn 19-21% Mn  
 3% max. Si 3% max. Si  
 Carloads ..... \$35.00 \$36.00  
 Less ton lots ..... 47.50 48.50  
 F.o.b. Pittsburgh, Chicago ..... 40.00

## Manganese Metal

Contract basis, lump size, cents per pound of metal, f.o.b. shipping point, freight allowed, eastern zone.  
 96% min. Mn, 0.2% max. C, 1% max. Si, 2% max. Fe.  
 Carload, bulk ..... 30  
 L.c.l. lots ..... 32

## Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.  
 Carloads ..... 32  
 Ton lots ..... 34  
 Less ton lots ..... 36

## Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, f.o.b. shipping point, freight allowed, eastern zone.  
 Carloads Ton Less  
 0.10% max. C, 0.06% P, 90% Mn ..... 21.00 21.40 21.65  
 0.10% max. C ..... 20.50 20.90 21.15  
 0.15% max. C ..... 20.00 20.40 20.65  
 0.30% max. C ..... 19.50 19.90 20.15  
 0.50% max. C ..... 19.00 19.40 19.65  
 0.75% max. C ..... 16.00 16.40 16.65  
 7.00% max. Si ..... 16.00 16.40 16.65

## Silicomanganese

Contract basis, lump size, cents per pound of metal, f.o.b. shipping point, freight allowed, 65-70% Mn, 17-20% Si, 1.5% max. C.  
 Carload, bulk ..... 6.05  
 Ton lots ..... 6.70  
 Briquet, contract basis, carlots, bulk freight allowed, per lb of briquet. 5.80  
 Ton lots ..... 6.30  
 Less ton lots ..... 6.55

## Silvery Iron (electric furnace)

Si 14.01 to 14.50%, \$51.25 f.o.b. Keokuk, Iowa; \$48.00 f.o.b. Jackson, Ohio; \$49.25 f.o.b. Niagara Falls. Add \$1.00 per ton for each additional 0.50% Si up to and including 18%. Add \$1.00 per ton for low impurities, not to exceed: P—0.05%, S—0.04%, C—1.00%.

## Silicon Metal

Contract price, cents per pound contained Si, lump size, f.o.b. shipping point, freight allowed, for ton lots, packed.  
 Eastern Central Western  
 96% Si, 2% Fe. 13.10 13.55 16.50  
 97% Si, 1% Fe. 13.45 13.90 16.80

## Ferrosilicon Briquets

Contract price, cents per pound of briquet, bulk, f.o.b. shipping point, freight allowed to destination, 40% Si.  
 Eastern Central Western  
 Carload, bulk .. 3.60 3.75 3.90  
 Ton lots ..... 4.05 4.55 4.60  
 Less ton lots .. 4.45 4.80 4.85

## Electric Ferrosilicon

Contract price, cents per pound contained Si, lump size in carloads, f.o.b. shipping point, freight allowed.  
 Eastern Central Western  
 50% Si ..... 7.05 7.50 7.65  
 75% Si ..... 8.55 8.70 9.25  
 80-90% Si ..... 9.50 9.65 10.15  
 90-95% Si ..... 11.80 11.95 12.40

## Ferrochrome

(65-72% Cr, 2% max. Si)  
 Contract prices, cents per pound, contained Cr, lump size in carloads, f.o.b. shipping point, freight allowed.  
 Eastern Central Western  
 0.06% C ..... 23.00 23.40 24.00  
 0.10% C ..... 22.50 22.90 23.50  
 0.15% C ..... 22.00 22.40 23.00  
 0.20% C ..... 21.50 21.90 22.50  
 0.50% C ..... 21.00 21.40 22.00  
 1.00% C ..... 20.50 20.90 21.50  
 2.00% C ..... 19.50 19.90 20.50  
 66-71% Cr,  
 4-10% C ... 14.50 14.90 15.00  
 62-66% Cr,  
 5-7% C ... 15.05 15.45 15.55  
 Briquets—contract price, cents per pound of briquet, f.o.b. shipping point, freight allowed, 60% chromium.  
 Eastern Central Western  
 Carload, bulk .. 9.20 9.50 9.90  
 Ton lots ..... 9.80 10.30 11.80  
 Less ton lots .. 10.10 10.60 12.10

## High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 2¢ per lb to regular low-carbon ferrochrome price schedule. Add 2¢ for each additional 0.25% N. High-carbon type: 66.71% Cr, 4-5% C, 0.75% N. Add 5¢ per lb to regular high-carbon ferrochrome price schedule.

## S. M. Ferrochrome

Contract price, cents per pound chromium contained, lump size, f.o.b. shipping point, freight allowed.  
 High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.  
 Eastern Central Western  
 Carload ..... 15.60 16.00 16.10  
 Ton lots ..... 16.65 17.30 18.50  
 Less ton lots .. 17.30 17.95 19.15  
 Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.  
 Eastern Central Western  
 Carload ..... 20.00 20.40 21.00  
 Ton lots ..... 21.00 21.65 22.85  
 Less ton lots .. 22.00 22.65 23.85

## Chromium Metal

Contract prices, cents per lb, chromium contained, carload, f.o.b. shipping point, freight allowed. 97% min. Cr, 1% max. Fe.  
 Eastern Central Western  
 0.20% max. C. 83.50 85.00 86.25  
 0.50% max. C. 79.50 81.00 82.25  
 9.00% min. C. 79.50 81.00 82.25

## Chromium—Copper

Contract price, cents per pound of alloy, f.o.b. Niagara Falls, freight allowed east of the Mississippi. 8-11% Cr, 88-90% Cu, 1.00% max. Fe, 0.50% max. Si.  
 Shot or ingot ..... 45¢

## Calcium—Silicon

Contract price per lb of alloy, lump, f.o.b. shipping point, freight allowed.  
 30-35% Ca, 60-65% Si, 3.00% max. Fe or 28-32% Ca, 60-65% Si, 6.00% max. Fe.  
 Eastern Central Western  
 Carloads ..... 13.00 13.50 15.55  
 Ton lots ..... 14.50 15.25 17.40  
 Less ton lots .. 15.50 16.25 18.40

## Calcium—Manganese—Silicon

Contract prices, cents per lb of alloy, lump, f.o.b. shipping point, freight allowed.  
 16-20% Ca, 14-18% Mn, 53-59% Si.  
 Eastern Central Western  
 Carloads ..... 15.50 16.00 18.05  
 Ton lots ..... 16.50 17.35 19.10  
 Less ton lots .. 17.00 17.85 19.60

## Calcium Metal

Eastern zone contract prices, cents per pound of metal, f.o.b. shipping point, freight allowed. Add 1¢ for central zone; 5¢ for western zone.  
 Cast Turnings Distilled  
 Ton lots ..... \$1.35 \$1.75 \$4.25  
 Less ton lots .. 1.60 2.00 5.00

## CMSZ

Contract price, cents per pound of alloy, f.o.b. shipping point, freight allowed.  
 Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.  
 Eastern Central Western  
 Ton lots ..... 12.00 12.75 14.75  
 Less ton lots .. 12.50 13.25 15.25  
 Alloy 5: 50-56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C.  
 Ton lots ..... 11.75 12.50 14.50  
 Less ton lots .. 12.25 13.00 15.00

## SMZ

Contract price, cents per pound of alloy, f.o.b. shipping point, freight allowed.  
 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe.  
 Eastern Central Western  
 Ton lots ..... 12.00 12.85 14.60  
 Less ton lots .. 12.50 13.35 15.10

## Other Ferroalloys

Ferrotungsten, standard, lump or ¼X down, packed, f.o.b. plant  
 Niagara Falls, Washington, Pa., York, Pa., per pound contained T, 5 ton lots, freight allowed. \$1.88  
 Ferrovandium, 35-55%, contract basis, f.o.b. plant, freight allowances, per pound contained V.  
 Openhearth ..... \$2.70  
 Crucible ..... \$2.80  
 High speed steel (Primus) ..... \$2.90  
 Vanadium pentoxide, 88-92% V<sub>2</sub>O<sub>5</sub>, technical grade, contract basis, per pound contained V<sub>2</sub>O<sub>5</sub>. \$1.10  
 Ferrocolumbium, 50-60%, contract basis, f.o.b. plant, freight allowed, per pound contained Cb.  
 Ton lots ..... \$2.25  
 Less ton lots ..... \$2.30  
 Ferromolybdenum, 55-75%, f.o.b. Langeloth, Washington, Pa., per pound contained Mo ..... 95¢  
 Calcium molybdate, 40-45%, f.o.b. Langeloth, Washington, Pa., per pound contained Mo ..... 80¢  
 Molybdenum oxide briquets, 48-52% Mo, f.o.b. Langeloth, Pa., per pound contained Mo ..... 80¢  
 Molybdenum oxide, in cans, f.o.b. Langeloth and Washington, Pa., per pound contained Mo ..... 80¢  
 Ferrotitanium, 40-45%, 0.10% C max., f.o.b. Niagara Falls, N. Y., ton lots, per pound contained Ti ..... \$1.23  
 Less ton lots ..... \$1.25  
 Ferrotitanium, 20-25%, 0.10% C max., ton lots, per pound contained Ti ..... \$1.35  
 Less ton lots ..... \$1.40  
 High-carbon ferrotitanium, 15-20%, 6-8% C, contract basis, f.o.b. Niagara Falls, freight allowed, carloads ..... \$142.50  
 Ferrophosphorus, 18%, electric or blast furnaces, f.o.b. Anniston, Ala., carlots, with \$3 unitage freight equalled with Rockdale, Tenn., per gross ton ..... \$58.50  
 Ferrophosphorus, electrolytic, 23-26%, carlots, f.o.b. Monsanto (Siglo), Tenn., \$3 unitage freight equalized with Nashville, per gross ton ..... \$75.00  
 Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.  
 Carload lots ..... 14¢  
 Zirconium, 12-15%, contract basis, lump, f.o.b. plant, freight allowed, per pound of alloy  
 Carload, bulk ..... 4.60¢  
 Alsifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Niagara Falls, carload ..... 5.75¢  
 Ton lots ..... 7.25¢  
 Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound Car lots ..... 8.50¢  
 Ton lots ..... 9.25¢  
 Less ton lots ..... 9.75¢

## Boron Agents

Contract prices per pound of alloy, f.o.b. shipping point, freight allowed.  
 Ferroboreon, 17.60% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C.  
 Eastern Central Western  
 Less ton lots .. \$1.30 \$1.3075 \$1.329

Manganese—Boron 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C.  
 Ton lots ..... \$1.89 \$1.903 \$1.935  
 Less ton lots .. 2.01 2.023 2.055

Nickel—Boron 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni.  
 Less ton lots. \$2.10 \$2.1125 \$2.1445  
 Silcaz No. 3, contract basis, f.o.b. plant, freight allowed, per pound of alloy.  
 carload lots ..... 25¢  
 Ton lots ..... 26¢

Silvaz No. 3, contract basis, f.o.b. plant, freight allowed, per pound of alloy.  
 Carload lots ..... 58¢  
 Ton lots ..... 59¢

Grainal, f.o.b. Bridgeville, Pa., freight allowed, 50 lb and over.  
 No. 1 ..... 87.5¢  
 No. 6 ..... 60¢  
 No. 79 ..... 45¢

Bortram, f.o.b. Niagara Falls  
 Ton lots, per pound ..... 45¢  
 Less ton lots, per pound ..... 50¢



# Atomic Scientists At N.Y. Meeting Discuss Cosmic Ray Mesons

New York

• • • Scientists exploring the interior of the atom are like Columbus standing on a Caribbean island off the coast of the great continent which lies beyond, according to Dr. John A. Wheeler, associate professor of physics at Princeton University, who arranged the program of the recent American Physical Society 3-day meeting here.

Nuclear physics on which the atomic bomb is based is the island, and subnuclear, or ultranucleonic, physics is the vastly greater continent beyond, he said. Only a few mountain peaks of the continent of ultra-nucleonics have so far been observed, he added.

More than a thousand scientists and engineers from a dozen countries concentrated most of their attention at the 3-day meeting, co-sponsored by the American Society of Mechanical Engineers, on one of these mountain peaks—the meson, a recently discovered particle within the atom.

"The list of things we would like to know about mesons is much longer than the list of things we know," said Dr. Bruno Rossi, Massachusetts Institute of Technology physicist, in a discussion of "Some Problems in the Study of Cosmic Ray Mesons."

Among the observations accepted as facts are:

Mesons have a mass of about 200 times the mass of the electron, or one-ninth the mass of the proton, one of the particles released by nuclear fission.

They have a life span of only 2 millionths of a second after which they disintegrate.

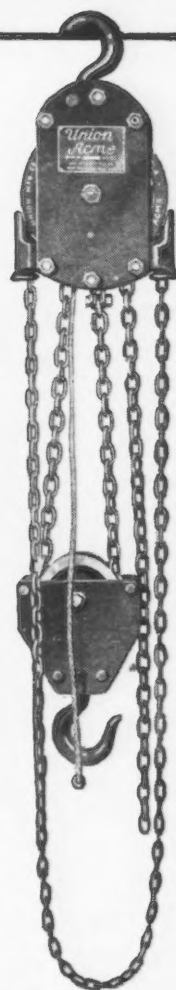
It is assumed that other particles between the masses of the electron and proton are yet to be discovered.

Mesons are produced in great quantities in the upper atmosphere, but exactly how is still a mystery.

Dr. R. P. Feynman, Cornell physicist, in an analysis of cosmic ray phenomena said recently that it has been assumed that protons

(CONTINUED ON PAGE 140)

## Light Weight Instant Acting UNION CHAIN HOIST



The Acme model illustrated is one of a large line of hoists manufactured by Union. Its outstanding feature is the instant acting raising or lowering of the unloaded bottom hook without overhauling the hand chain. It can be raised instantly to load by pulling the

slack end of the load chain, lowered to work by pulling the ratchet cord and pulling the hook down. The ratchet pawl cannot be released while the hoist is loaded. This instant acting feature gives the Union Acme Hoist a great advantage over other types of hand hoists for many classes of work. It's light in weight and can be easily moved from place to place and is particularly suitable for work in its capacities of 1/4 to 1 1/2 tons. The chain guide is snagproof and will not bind or catch hand chain.



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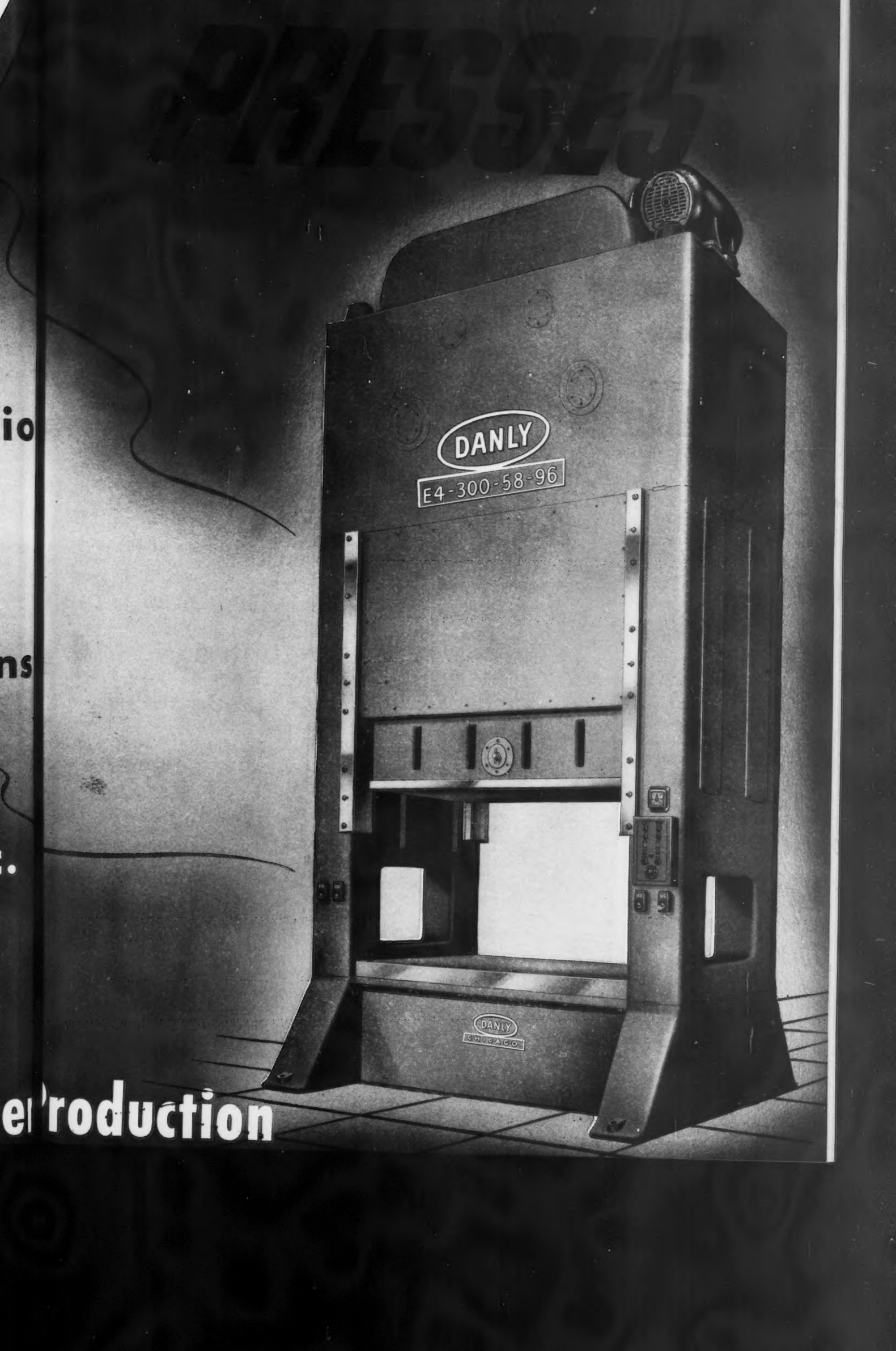
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**Capacities:** Wood screws up to 1½", machine screws from No. 10 down to No. 2

**Clutch:** New "Adjustomatic" selective torque

**Gears:** Heat-treated chrome nickel steel

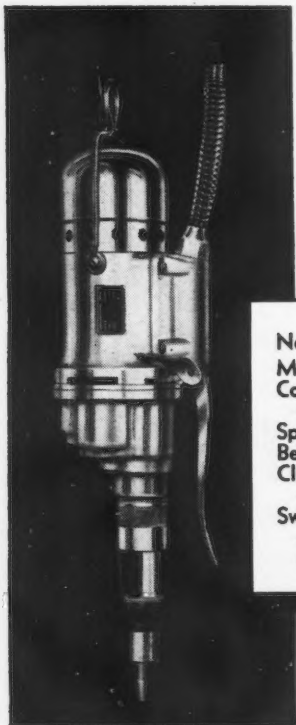
**Ball Bearings:** Throughout

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(CONTINUED FROM PAGE 137)

are released by cosmic ray bombardment of atoms in the upper atmosphere, and that the protons collide with the nuclei of other atoms and produce mesons.

When mesons are produced thousands of times as much energy is released as results from fission of the nucleus of the atom, indicating a source of power thousands of times greater than nuclear energy.

Laboratory production of mesons is extremely difficult because billions of electron volts are required to produce them in quantity. Consequently most observation of mesons depends on study of the stratosphere where they result in some manner from cosmic ray bombardment.

German V-2 rockets and balloons, equipped with apparatus to record stratospheric phenomena, are being used for extreme altitudes. Airplanes are used for study at lower altitudes. The Tata Research Institute, Bombay, India, is the source of much of the information obtained by laboratory-equipped airplanes, and Dr. H. J. Bhabha who has conducted this research was also scheduled to report his findings to the group.

### Pittsburgh Chapter To Preview Top Technical Papers of Metal Show

Pittsburgh

••• Previewing the National Metal Congress and Exposition, the Pittsburgh Chapter of the American Society of Metals on Oct. 31 will present six of the leading technical papers to be given at the national meeting. Last year a small part of the technical program of the postponed National Metal Congress was brought to Pittsburgh as a regional meeting and the popularity of the program made it desirable to repeat this action.

The program will consist of a 1-day meeting at the Mellon Institute Auditorium and concluding with a dinner meeting at the Hotel Schenley, the guest speaker at which will be Col. R. C. Downie, president of the Peoples First Na-



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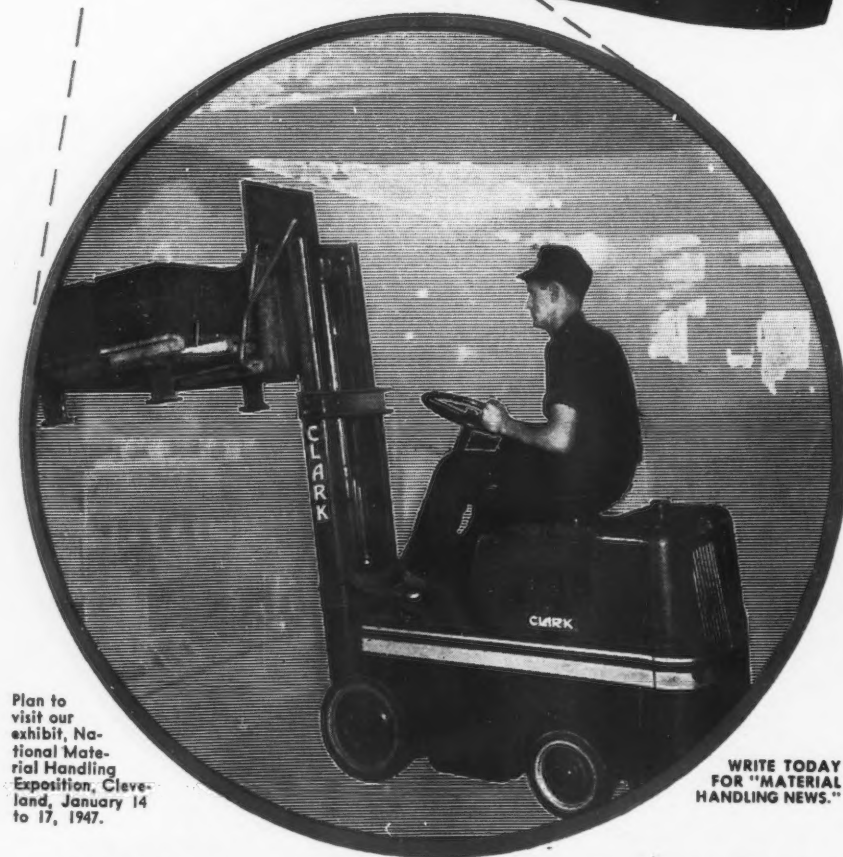
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tional Bank & Trust Co., and former chief of the Pittsburgh Ordnance District for the Army.

The technical meeting will be in two sessions, the morning session consisting of papers by R. A. Grange, of the U. S. Steel Corp., research laboratories; J. W. Spretnak, of Carnegie Institute of Technology; and T. G. Digges and Fred M. Reinhart of the National Bureau of Standards.

The afternoon session will consist of papers given by C. B. Post and W. S. Eberly of Carpenter Steel Co.; L. J. Ebert, M. L. Fried and A. R. Toole of Case School of Applied Science; and B. F. Shepherd of Ingersoll-Rand Co.

R. A. Grange will discuss "Factors Influencing the Pearlitic Microstructure of Annealed Hypoeutectoid Steel." In a number of important grades of steel in use today, a structure of well-formed lamellar pearlite does not always result from full annealing. The influence of the inter-related factors—steel composition, deoxidation practice and austenite grain structure—on the pearlitic microstructure of annealed hypoeutectoid steel will be discussed.

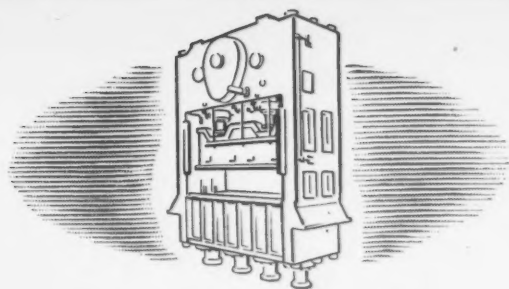
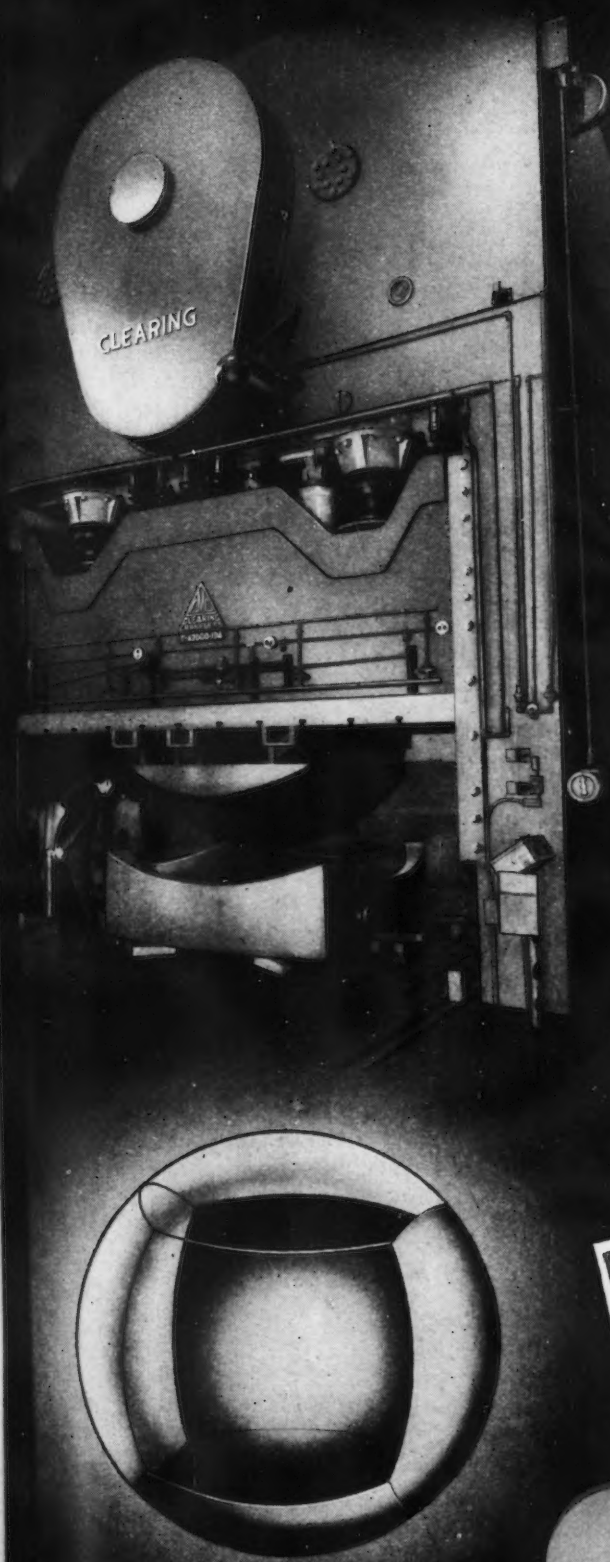
J. W. Spretnak will present a paper on "Kinetics of Solidification Killed Steel Ingots." Solidification of killed steel ingots was studied by means of the electrical analogy method and by actual bleeding tests. Data was developed on solidification times and the various factors influencing them.

In a paper entitled "A Rapid Method for Accurate Yield Stress Determination Without Stress-Strain Curves," L. J. Ebert, M. L. Fried and A. R. Toole tell of a method developed by means of which yield strength of nonferrous materials and heat-treated steels can be determined accurately and quickly by a single operator without the aid of an automatic load-elongation recorder.

"Stability of Austenite in Stainless Steels," a paper by C. B. Post and W. S. Eberly, covers investigations of specific stainless steels through the medium of measuring the change in magnetic permeability of these austenites after cold reduction. The effect of the carbon content on the tensile strength of stable austenitic stainless steels is discussed, and an empirical for-



This 2,000-ton Clearing mechanical press has a 30" stroke, and operates at either 1 or 3 strokes per minute. Bed area is 96" x 194"; shut height is 60". Four double 32" cushions with 15" stroke (below the floor level in the picture) give a total cushion capacity of 321 tons. Four 16" locking devices and pneumatic flywheel brake are also part of the equipment.



## Cold Forming $\frac{3}{4}$ " Plates for 10'6" Spheres

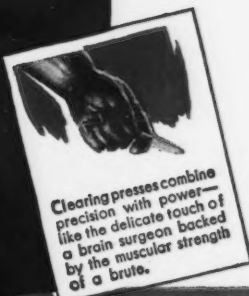
To hold propane and other gases under sufficient pressure to keep them as liquids for compact storage is a job calling for engineering—and manufacturing facilities—of the highest order. Spherical tanks have certain technical advantages, but their production involves an exacting forming operation on heavy plates—flange quality steel of 55,000 p.s.i. tensile strength, .75" minimum thickness, and 101 inches square.

The Commercial Shearing and Stamping Company, Youngstown, Ohio, are forming such plates on the Clearing press (2,000 tons capacity) shown in the illustration. The six finished segments to make a complete sphere are assembled with only 78 lineal feet of weld. The result saves more than 35% of the material needed for a cylindrical tank to provide equal capacity.

Clearing presses have long played an important part in the production of better items at lower costs, because Clearing makes engineering dreams come true. If you need a huge press of tremendous strength, Clearing can provide it. With small presses or large, if your work demands extreme precision, unusual flexibility of control, high operating speeds or special cycling—Clearing has the answers.

If you want to do something that has never been done on a press before, you will find kindred spirits, well fortified with experience, at Clearing.

It will pay you to consult Clearing on your prospective production problems. There is no cost or obligation involved in doing so.



Clearing presses combine precision with power—like the delicate touch of a brain surgeon backed by the muscular strength of a brute.

# CLEARING

THE WAY TO EFFICIENT MASS PRODUCTION

**CLEARING MACHINE CORPORATION**

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ments are formed as shown in the photo, then flame beveled for ding into a complete sphere of 126" inside diameter. Each individual segment as it comes from the press weighs nearly a ton.

## Modern offices exhibit the wide use of THOMASTRIP



### meets functional and decorative requirements

The wide range of properties and finishes of ThomaStrip aids manufacturers to keep pace with modern designs and production short cuts. Thomas has long specialized in making steel for office equipment—including communicating systems, office machines, office supplies, electrical fixtures, hardware, furniture, Venetian blinds and trim. The use of ThomaStrip is so extensive that you can be sure some product in every modern office has a part made of Thomas cold rolled strip steel. In planning your product, investigate the special advantages of ThomaStrip.

*Why?* . . . because the versatility of ThomaStrip extends the benefits of steel into many products. It is available in a wide range of finishes, coatings, special tempers, and analyses . . . in electro-coated zinc, copper, nickel, and brass . . . hot dipped tin and solder . . . lacquer coated in colors . . . uncoated precision strip . . . carbon and alloy specialties. Our engineers will be glad to work with you.

**THE THOMAS STEEL CO. • WARREN, OHIO**  
COLD ROLLED STRIP STEEL SPECIALISTS

**Thomas Strip**  
COLD ROLLED STRIP STEEL

ELECTRO-COATED ZINC, COPPER, NICKEL AND BRASS . . . HOT  
DIPPED TIN AND SOLDER . . . LACQUER COATED IN COLORS . . .  
UNCOATED PRECISION STRIP, CARBON AND ALLOY SPECIALTIES

mula was developed to estimate the nickel content required to make chromium-nickel steel substantially stable.

"Influence of Boron on Some Properties of Steels," by T. G. Digges and F. M. Reinhart, deals with the investigations made at the National Bureau of Standards during 1942, 1943, and 1944. Results of a variety of tests on a variety of boron treated steels are summarized in the paper.

B. F. Shepherd, in his paper "Hardenability of Shallow Steels Determined by the PV Test," describes a new hardenability test specifically suited for determining the hardenability of shallow hardening steels that require cooling rates faster than 80°F per sec at 1300°F to develop 50 pct martensite. The test is in use in seven laboratories.

### Manufacturing Plant Is Offered For Sale

Cleveland

• • • A general purpose manufacturing plant, used during the war for production of bullet cores for small arms ammunition and readily adaptable to the production of various types of screw machines, is being offered for sale or lease by War Assets Administration at Toledo, Ohio.

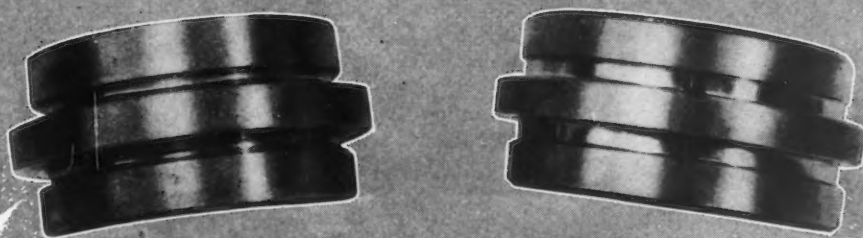
The facility, formerly operated by Willys-Overland Motors, Inc., occupies 3½ acres within the boundary line of the Willys property, which is less than 3 miles from the business section of Toledo. The structure was rehabilitated in 1942 and its 3-story design provides a total floor area of 350,000 sq ft. The building has reinforced concrete frame, asphalt flooring and concrete roof deck. Water, sewer, power, light and steam services are supplied by the Willys-Overland plant.

Equipment in the building includes an assortment of machine tools, certain items of laboratory and testing equipment, automatic screw machines, electric heat treating furnaces, draw furnaces, quench oil tanks, cutting oil tanks, conveyors, hoppers and necessary office equipment and fixtures.



# TWO TOUGH BOYS

## That PROVED they could take it..



### JESSOP CAST-TO-SHAPE SEAMING ROLLS

Seamed 1,820,000 barrel covers each  
with only ONE grind

At the Chicago plant of the Rheem Manufacturing Company these Jessop 3-C Special Cast-to-Shape seaming rolls were used to turn over edges to the body of 55 gallon steel containers. During two years of service each roll averaged 3,500 drums per day for a total of 1,820,000. Because of their high wear resistance it was necessary to grind the rolls only once, a small amount of polishing serving for redressing.

At the same plant JESSOP 3-C Special Cast-to-Shape blanking dies produced over 2,250,000 covers from scaly hot rolled 18-gauge stock, during a 2½ year period. Wear on the dies is so slight they are expected to last 2½ more years. On still another application, JESSOP 3-C Special Cast-to-Shape rolls formed 250,000 to 260,000 Quick Lock Rings from hot rolled 12 gauge stock. Despite heavy scale present, polishing was required only after 75,000 rings were formed.

Remarkable production runs such as these are being duplicated or exceeded in many other plants using JESSOP 3-C Special Cast-to-Shape dies and tools. 3-C Special is a high carbon-high chromium air hardening tool steel with very high wear resistance. Tools cast-to-shape at our plant from this steel can be put into use almost immediately, since very little machining is necessary. The savings in time and money can be readily appreciated.



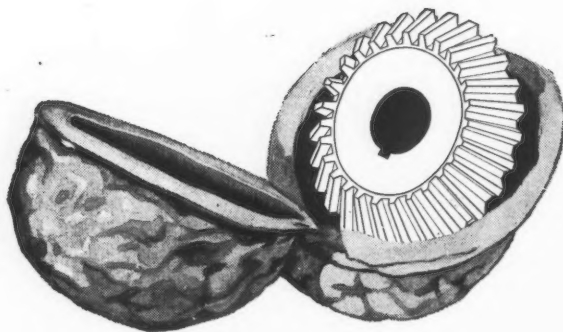
★Write for literature on JESSOP'S 3-C Special and on JESSOP'S Cast-to-Shape Steels.

JESSOP STEEL COMPANY

WASHINGTON, PA.

TAILOR-MADE SPECIALTY STEELS

**in a nutshell....**



## **PERKINS Gear Engineering Service**

Here are the answers to the most important questions which buyers of custom-cut gears ask themselves when looking for a reliable source of supply.

### **facilities?**

Our plant is equipped with the most modern machine tools necessary for the quantity production of precision gears to customers' specifications.

### **background?**

Perkins—as a source of supply for custom-cut gears—is accorded preferential status by hundreds of nationally and internationally known manufacturers.

### **deliveries?**

A highly efficient inter-departmental follow-up system enables us to steadily maintain an unusually high percentage of delivery promises.

### **range of products?**

We produce Helical Gears, Bevel Gears, Ratchets, Worm Gears, Spiral Gears, Spur Gears and Ground Thread Worms in the following materials: Cast Iron, Steel, Bronze, Brass, Aluminum, Stainless Steel, Cast Alloys, Monel Metal and Non-Metallic Compounds or Compositions.

*You furnish the specifications • We'll produce the gears*

**PERKINS Precision, Custom-Cut**  
**PERKINS MACHINE & GEAR CO., Springfield 2, Mass. GEARS**

## **NEWS OF INDUSTRY**

### **Urges More Stringent College Training For Engineering Students**

*Boston*

• • • A plea for higher standards in the engineering profession through more stringent requirements for college engineering degrees was voiced by Frederick S. Blackall, Jr., of Woonsocket, R. I., president of The New England Council, before The American Society of Mechanical Engineers.

Mr. Blackall, who has just been elected a director of the ASME to serve for the next 4 yr, warned that engineering societies must "guard their portals jealously" against gate-crashing by self-styled engineers "who couldn't even read a slide rule." He cited the abuse and misuse of the word engineer and said that "to one who has become an engineer the hard way and looks with justifiable pride upon his profession, this is just a little bit sickening."

Vast technological advances, in fields such as atomic fission, electronics, heat treatment and metallurgy, necessitate that tomorrow's engineer "cram more material into his cranium than can possibly be done in the short space of a 4-year college course," he said.

Engineering should be placed on a parity with medicine, the law and other learned professions. Specifically, training should include 3 or 4 yr of pre-engineering college work, with emphasis on the liberal arts and humanities, and with basic requirements in mathematics and science. This would be followed by 2 or 3 yr of specialization in the chosen field of engineering. The engineering degree would be given at the end of the graduate work.

A beginning step already is being taken by Cornell University this year, with a five-year engineering course. Mr. Blackall continued:

"It may be argued that such an arbitrary raising of the educational standards of our profession would exclude from its ranks many who could not afford, in time or money, or both, to meet the requirements. Half a century ago, the same objections were voiced when it was proposed to raise the



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paint  
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*HOLDS JUST THE  
RIGHT AMOUNT OF PAINT*

*DOESN'T MAT OR FINGER*

*KEEPS ITS STIFFNESS IN  
PAINTS CONTAINING WATER*

*Brush Division*  
**PITTSBURGH**  
**PLATE GLASS COMPANY**



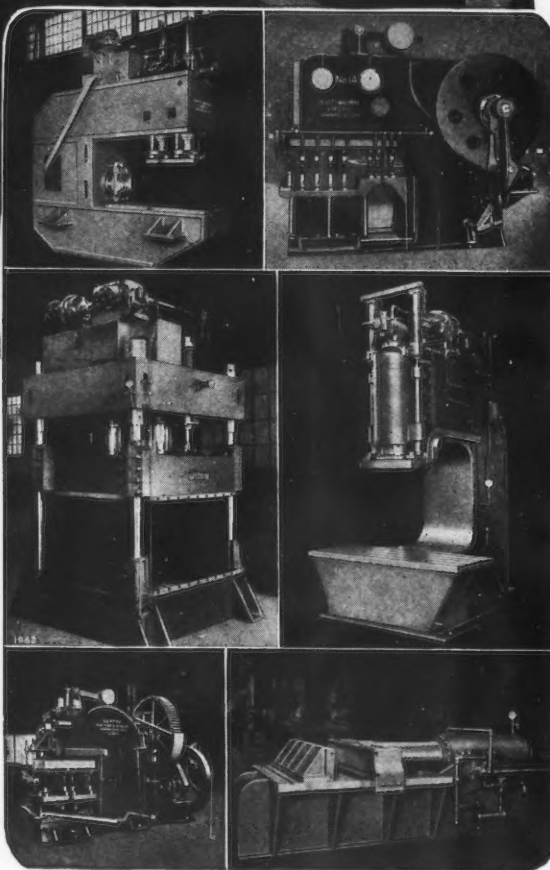
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OF  
NATIONAL USE**

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puts that *Plus* in BEATTY machines



**B**ack of the solid, money-making performance of every BEATTY Machine stands the sound, seasoned judgement of a BEATTY engineer. This broad engineering experience represents an important bonus in every machine that bears the BEATTY name.



## BEATTY MACHINE AND MFG. COMPANY

HAMMOND, INDIANA

standards of medical education, but who today will argue that the step was not a wise one?

"To an increasing extent, the engineer is called upon to exercise broader functions than those of pure research and design, or the direction of technical processes. As he reaches the higher echelons, his duties increasingly embrace management, economics, labor and social problems, finance, and above all, the necessity for effective contact with all manner of people. Adequate preparation for such responsibilities requires breadth as well as depth.

"Indeed, one of the minor tragedies of technical life is the presence in our ranks of too many hack engineers, men who somehow have wangled a technical degree, or may even have completed the formalities with apparent merit, but who simply never can and never will measure up to what you and I mean when we speak of a competent engineer. These poor souls go through life ever in a rut, frustrated, and disappointed, feeling, perhaps with some justice, that they have been sold down the river, because they have been through the diploma mill, but simply cannot make the grade. A system which permits this to happen to an extensive degree does no good either to the profession or to the victims of the system. . . .

"I do not imply for a moment that the only way to secure an education is to go to college, or that the technical graduate who has had no more than 4 yr of straight mechanical engineering may not develop into a broad-gaged, well-informed person of wisdom and breadth of vision.

"We are on the threshold of an era of great scientific advancement, which, in the judgment of many, will generate a host of new industries, and to such an extent transform our daily lives that one day the techniques of 1946 will seem as crude and outworn as those of the nineteenth century seem to us. If mechanical engineers are to meet the challenge of research and discovery, they will require the best of preparation. There never was a more timely moment in history to raise the standards of our profession or to take steps to hold them high."



**When  
locomotive wheels  
were forged  
like this...  
"STANDARD"  
was producing  
2000 tires  
a year**

Railroading was only 30 years old in 1860, when locomotive wheels were forged like this. Yet even then, Standard Steel was an important supplier to the infant transportation industry. Two or three years before, its new mill was turning out 2000 tires a year.

The tires were made from charcoal blooms, piled, heated and forged into a bar of rectangular section, which was put through a swedging die until the flange was roughly formed. The bar was then reheated, rounded up, scarfed, welded and rolled into a tire.

What a contrast with tire production at Standard Steel today! The modern mill contains three units, each composed of a tire mill with two steam hammers for preliminary operations. In addition to tires, other miscellaneous products of circular form are rolled in practically all sizes, up to a maximum of 12-foot outside diameter. Total capacity approximates 2300 pieces per week.



PHOTO COURTESY OF THE BETTMAN ARCHIVE

FROM A METAL MAKER'S "FAMILY ALBUM"

If you need any products like this, an excellent way to simplify your buying is to "Standardize on Standard."



**BALDWIN**

**FORGINGS AND CASTINGS**

The Baldwin Locomotive Works, Standard Steel Works Division, Burnham, Pa., U.S.A. Offices: Philadelphia, New York, Chicago, St. Louis, Washington, Boston, San Francisco, Cleveland, Detroit, Pittsburgh, Houston, Birmingham, Norfolk.

"STANDARDIZE ON STANDARD" FOR YOUR FORGINGS AND CASTINGS

**INCREASE YOUR  
PAYLOADS**

**BUILD WITH  
AW DYNALLOY**

A new era of lightweight construction has been opened by AW Dynalloy, the versatile high strength low alloy steel. Bigger payloads in trucks, freight cars and buses are now made possible. With AW Dynalloy you can reduce dead-weight as much as 40% without any reduction in strength or safety. This extremely tough steel has 4 to 6 times greater resistance to atmospheric corrosion than plain carbon steel and twice that of copper bearing mild steel. AW Dynalloy's excellent weldability, ductility and cold forming properties combined

with its high resistance to impact, abrasion and fatigue make it exceptionally valuable for constructing vehicles, portable and stationary structures. Look into the advantages of AW Dynalloy now.

Write for your copy of our New Folder D-12. It contains helpful information and maximum sizes.

**PHYSICAL PROPERTIES OF  
AW DYNALLOY**

Yield Point P.S.I. Minimum	50,000
Tensile Strength P.S.I.	65-80,000
Elongation in 2", %	25.0
Minimum	
*Elongation in 8", %	1,500,000
Minimum	
Endurance Limit P.S.I.	45,000
Specimen Cold Bend, 180° @ diameter=1 thickness	

\*For material under 5/16" to 3/16" inclusive, deduct 1.25 per cent for each decrease of 1/32" below 5/16" from the percentage of elongation in 8" specified above.

**AW DYNALLOY**

THE HIGH STRENGTH LOW ALLOY STEEL

*A Product of* **ALAN WOOD STEEL COMPANY**  
CONSHOHOCKEN, PENNA.

**NEWS OF INDUSTRY**

**ASM Will Revive West Coast Show in Spring, Last Was Held in 1941**

*Cleveland*

••• Floor plans for the Western Metal Congress and Exposition, which will be held in the San Francisco-Oakland Golden Gate area for six days beginning Mar. 22, 1947, are being mailed to exhibitors in former expositions, according to W. H. Eisenman, managing director of the Congress and Exposition.

Held last in Los Angeles in 1941, the event will again be sponsored by the American Society for Metals, and will have the active cooperation of West Coast chapters of the nation's leading technical societies. The event, the fifth WMCE, will be held in the two Oakland civic auditoriums.

In his announcement, Mr. Eisenman stated that "the West Coast has grown industrially in leaps and bounds. Its magnificent contribution to the winning of the war has demonstrated its ability to contribute in an even greater way to the productivity of the nation."

Technical programs of the Western Metal Congress will include lecture courses, technical papers and round table conferences of special interest to the metals, aviation, petroleum, chemical, mining and general manufacturing industries. Further announcements of this program will be made at a later date.

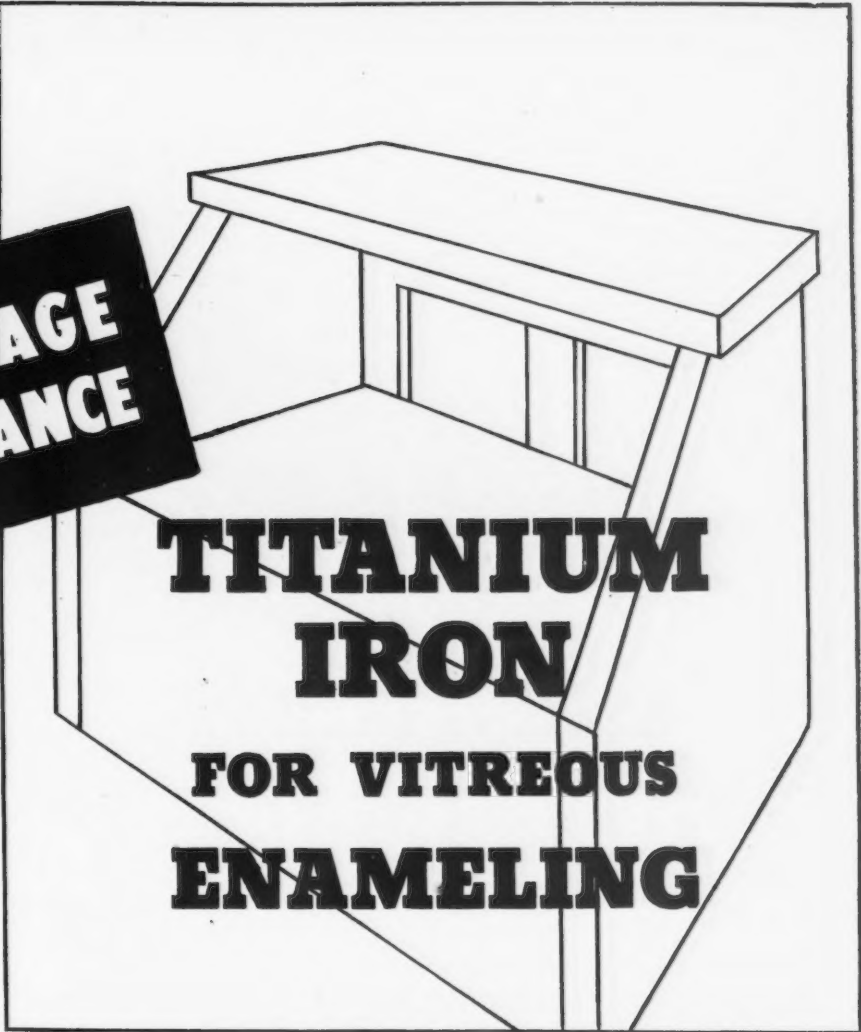
A complete cycle of equipment and methods relating to the metals industries, including raw materials, heat treating apparatus and supplies, inspection methods and equipment, machinery, foundry supplies, materials handling, welding and cutting, oil field equipment, small tools and finished products, will be shown at the exposition.

Technical sessions of the Congress and exhibits in the Exposition will be housed in the two large auditoriums which are only 125 ft apart and well suited to the handling of both activities.

Attendance at the 1941 Western Metal Congress and Exposition was approximately 50,000 and it is expected that the 1947 figures will exceed that total.



**THINNER GAGE  
SAG RESISTANCE**



**TITANIUM  
IRON  
FOR VITREOUS  
ENAMELING**

**E**NAMELED WARE of lighter gage stock can be fabricated to desired shapes and retain a better appearance because of the increased sag resistance of Titanium iron for vitreous enameling. This particular feature is clearly demonstrated on chart at right.

Another feature is the elimination of formerly necessary ground coats. For—under proper shop conditions—the cover coat can be applied directly to the base metal. Also, these thin finishes reduce the hazards of chipping and breaking. Furthermore, at enameling heats, there is no sign of enamel boiling. During three years of both research and production experience, no case of fish scaling has been reported.

Further information is available upon request.

EFFECT OF GAGE AND COMPOSITION ON SAGGING RESISTANCE	
GAGE AND COMPOSITION	DEGREE OF SAG IN %
24 Ga. Standard Enameling Iron . . . . .	100
24 Ga. Titanium Steel . . . . .	57
18 Ga. Standard Enameling Iron . . . . .	100
18 Ga. Titanium Steel . . . . .	18

The Titanium Alloy Manufacturing Company produces the titanium alloy used in the manufacture of this steel. For samples of this steel, see your steel supplier. Pending patent appli-

cations on the new enameling process and products made thereby are owned jointly by Inland Steel Company, and The Titanium Alloy Manufacturing Company under trust agreement.



**TITANIUM ALLOY MANUFACTURING COMPANY**  
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## Reports Available On Investigation Results Of Mineral Deposits

Washington

• • • Results of three investigations of mineral deposits or mines in different sections of the United States are described in separate reports released recently by Dr. R. R. Sayers, Director of the Bureau of Mines.

Representing a part of the Bureau's wartime mineral development program, the investigations were conducted under authority of the Strategic Materials Act of 1939 and subsequent legislation. Through the work of Bureau mining engineers and metallurgists, considerable aid was given in supplying the country with much-needed war minerals and further information was disclosed on the nation's metal and fuel resources.

It was not feasible to publish the reports during the war, but they are now being made available to the public and the minerals industries. The three reports released recently are concerned with zinc, lead and iron ore. They are as follows:

Report of Investigations 3912, "Exploration of the New Dale Rundell Zinc Mine, Mifflin District, Iowa County, Wis.," part of a general study of the zinc deposits of southwestern Wisconsin, by Francis C. Lincoln, mining engineer.

Report of Investigations 1941, "Exploration for Zinc and Lead Ore, Phelps Lease, Jasper County, Mo.," which describes in detail the churn drilling on this property. Louis C. Brichta, mining engineer, is the author.

Report of Investigations 3918, "Exploration of the Shanton Iron-Ore Property, Albany County, Wyo.," a publication prepared by Eugene Frey, mining engineer, covers Bureau exploratory work on this property in 1942, 1943, and 1944.

The work on these projects was carried on by the Mining Branch of the Bureau with assistance from the Federal Geological Survey and State agencies.

A copy of the above publications may be obtained free from the Bureau of Mines, Dept. of the Interior, Washington 25.

**SCALE FREE •  
LOW COST •  
CONTINUOUS •**

### hardening of small parts

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Performance records of hundreds of installations prove that these furnaces are unsurpassed for the efficient economical heat treatment of a wide range of small and medium size parts. But send for our 12 page Bulletin No. R-1—"Chain Belt Conveyor Furnaces"—it gives full details—and let EF engineers work with you on your next heat treating job!

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GAS FIRED, OIL FIRED AND ELECTRIC FURNACES  
FOR ANY PROCESS, PRODUCT OR PRODUCTION  
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For Handling Products in  
Any Size or Shape

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We Build the Furnace to Fit Your Job

**THE ELECTRIC FURNACE CO.**  
SALEM, OHIO

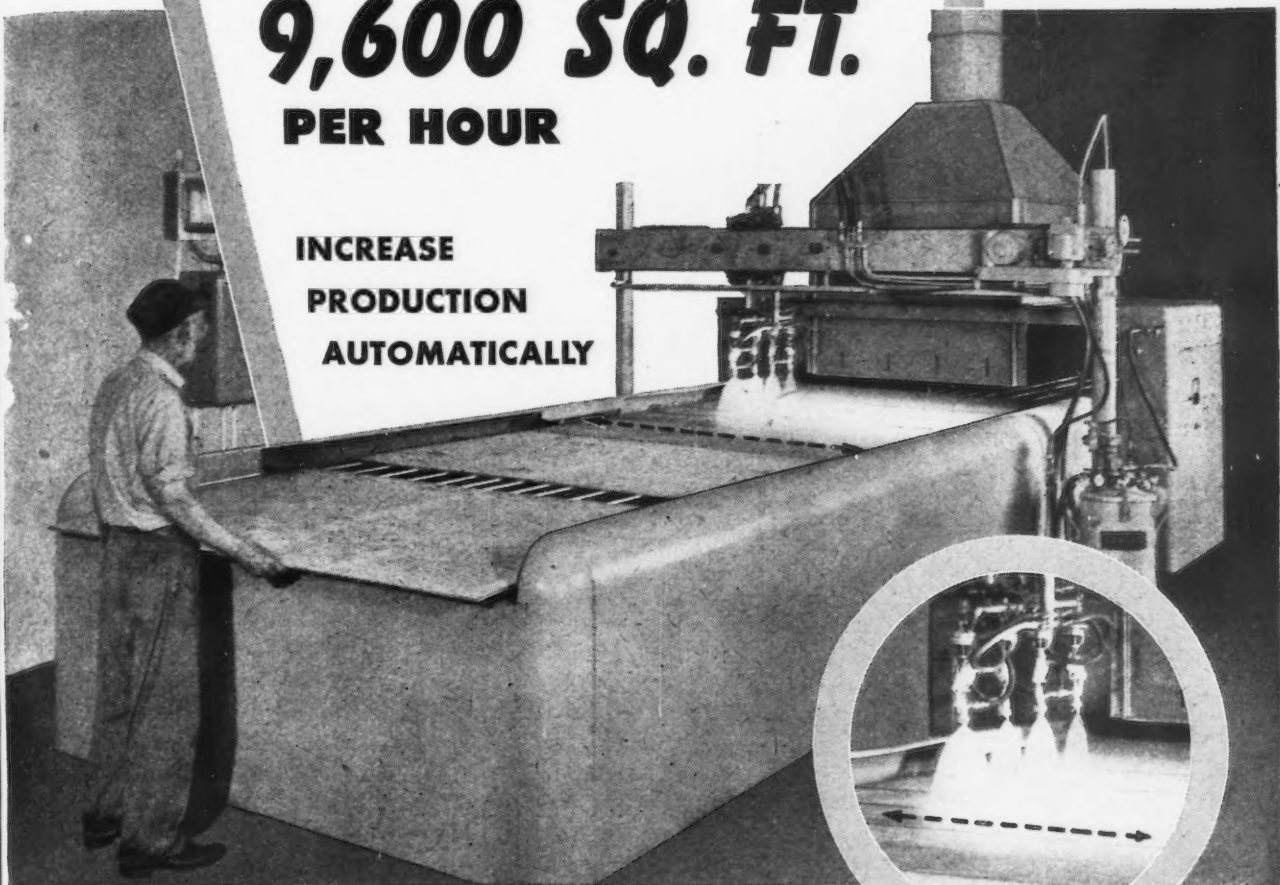


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Any Process or Production, Consult  
The Electric Furnace Co., Salem, Ohio  
No Job Is Too Large or Too Unusual



**PAINT UP TO  
9,600 SQ. FT.  
PER HOUR**

**INCREASE  
PRODUCTION  
AUTOMATICALLY**



*A DeVilbiss Horizontal Transverse Automatic painting plywood panels on a mass production basis.*

*Guns are adjustable to regulate spray pattern, overlapping and length of travel, thereby reducing overspray to an absolute minimum.*

• DeVilbiss Horizontal and Vertical Transverse Automatic Spray Machines are specially designed for mass production of flat or nearly flat surfaces. Any sprayable material can be handled with the rate of production determined by the nature of the object and type of coating required.

Human variables associated with manual spraying are eliminated. High production is accompanied by absolute uniformity and control of finish quality.

Very likely you too can increase production by doing your coating and finishing automatically. Consult DeVilbiss . . . for help with your problems.

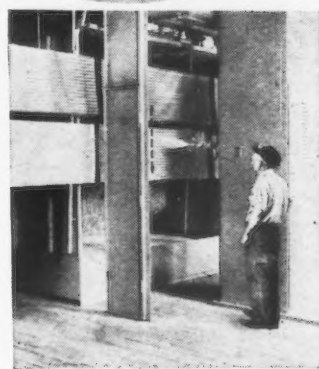
**THE DEVILBISS COMPANY • Toledo 1, Ohio**  
Canadian Plant: Windsor, Ontario

# DEVILBISS

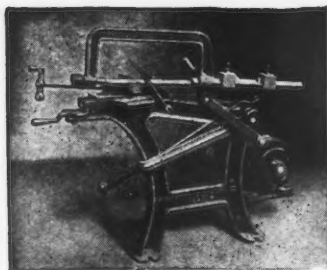


*means Quality in all four . .*

**SPRAY EQUIPMENT  
EXHAUST SYSTEMS  
AIR COMPRESSORS  
HOSE & CONNECTIONS**



*A DeVilbiss Vertical Transverse Automatic spraying corrugated metal sheets. These machines are frequently arranged in banks to paint both sides of flatwork simultaneously.*

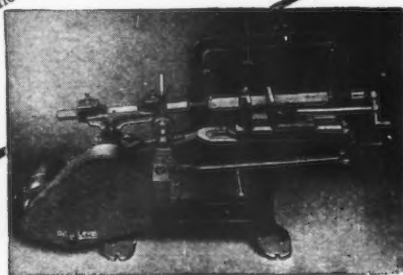


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of all Small Shop  
Saws are "Marvels"!

**No. 1 Draw Cut Hack Saw**  
Dry cut, 4" x 4" capacity. A sturdy saw well-known for its dependability, economy, and invaluable service in the small shop or shop department. Simple and efficient with low original, maintenance, and blade cost.

**MARVELSAWS**

**No. 2 Draw Cut Hack Saw.** Companion to the No. 1 but with a normal 6" x 6" capacity which can be increased to 8" x 8" by shortening the stroke with adjustable crank. The No. 2 MARVEL also has a swivel vise which is removable from the "T" slotted bed. Permitting special fixtures to be mounted. Both machines are available in belt and motor driven models. Motor driven models can also be furnished mounted on portable truck.



**Complete Range of Metal Sawing Machines**

Being the largest exclusive manufacturer of metal sawing machines and blades, both hack saw and band saw type, we have the correct answer to your cut-off problems. Each MARVEL model has a distinct application, so write us and we will send our catalog, price, and recommendation for the saw to fill your requirements most efficiently. MARVEL sawing engineers are also available to discuss and analyze your cut-off work. (Without obligation of course)

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Cleveland 14, Chicago 23, Newark 5, Detroit 3, Buffalo 10, Cincinnati 32

### NEWS OF INDUSTRY

#### London Economist

(CONTINUED FROM PAGE 119)

after the ratification of a large American loan to Britain—cynical references by foreign observers to "His Master's Voice" are understandable.

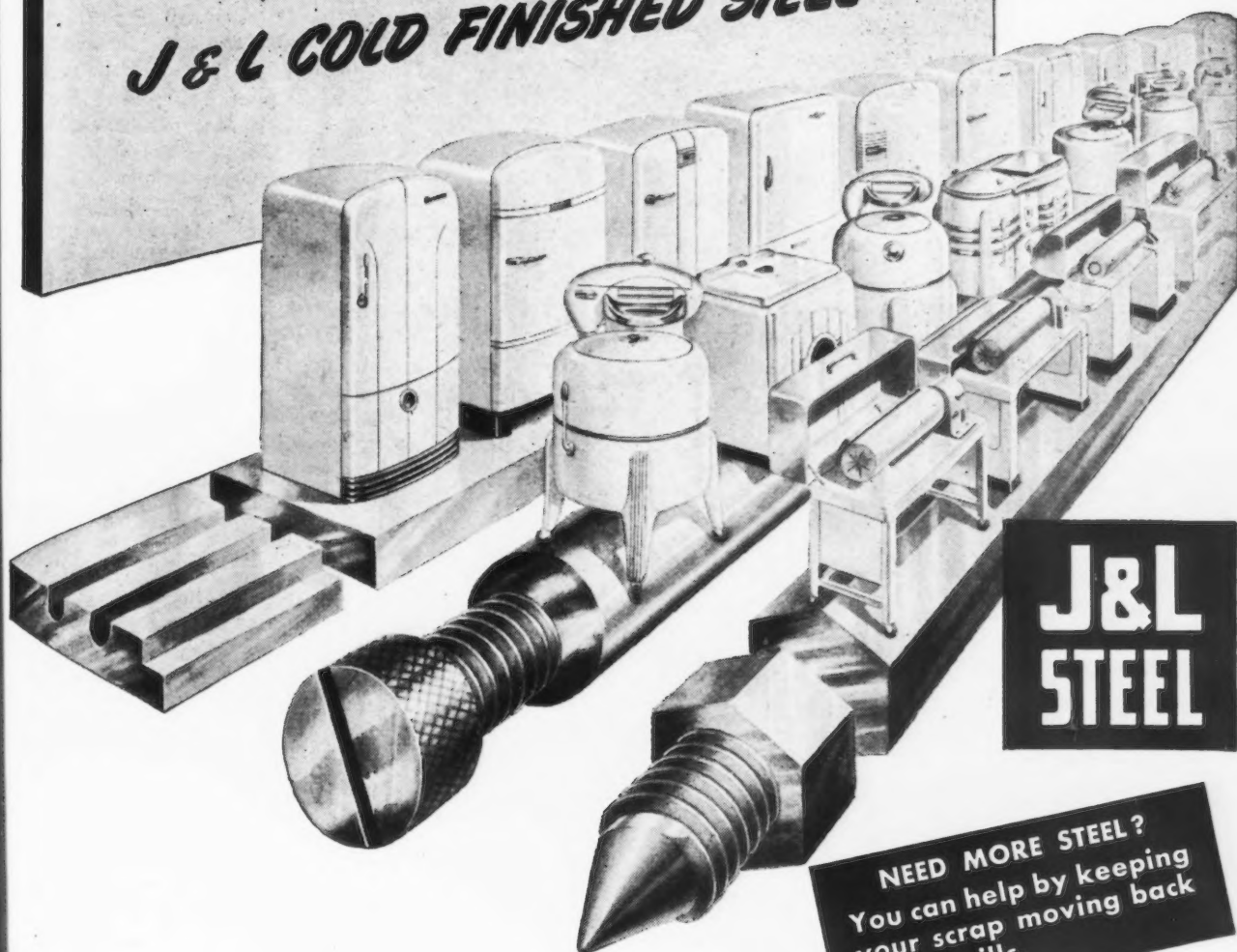
The question that Mr. Wallace's speech inevitably raises is not the nonsensical one whether the siren voices of British imperialists are luring Mr. Byrnes to his doom, but the much more serious one whether British foreign policy is now committed to following American foreign policy—and, if so, exactly what is it we are following, and whither. There are undoubted disadvantages about too close an identity of policies between the two countries. Though the present constellation of American politics gives Mr. Wallace's view no chance of becoming official policy, it would be very rash to dogmatize about how long it may be before the spin of the wheel brings these ideas, which have been powerful in the past, back into fashion.

If the British wagon is hitched too closely to the American star, it will be given a very dizzy ride, and may be pitched into the Milky Way at the end. The dangers of a too rigid and adherence to American ideas on international economic policy have often been pointed out in *The Economist* and need not be repeated. But in the present context it should be added that advocacy of private trading methods and insistence on the removal of controls, which may be harmless in the United States or in Great Britain, leads to the Americans and the British keeping some very queer company on the Continent of Europe. At the moment, a simple following of the American lead seems to be pushing an even greater danger above the horizon. It is not necessary to be an "appeaser" to feel some alarm at the recent trend of American policy towards Russia. To be determined to stand firm against any further advance by the Soviets is one thing; but openly to provoke and challenge Russian policy is another.

The British attitude towards Russia is still colored more by sorrow than by anger; there is no disposition to consider an armed clash inevitable, even in the long run, and still less disposition to



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## NEWS OF INDUSTRY

precipitate it. It is not in this crowded, vulnerable island that there is any talk of preventive campaigns. If, on top of all these disadvantages of following the American line too closely, there is now to be heaped a new campaign of crude and ignorant insults by American "liberals" seeking to work off their domestic frustrations at Britain's expense, then many Englishmen will conclude that the game is not worth the candle.

Yet it would be very foolish, under the impact of these difficulties, to forget the compulsive nature of the arguments that draw American and British policy together. There is no need to quibble about the exact relative degrees of mutual dependence; the fact is that the whole Atlantic Commonwealth is strategically interdependent and the position of either of its two major partners would be immeasurably weaker if it could not rely, in a crisis, on the other. This is the material argument, and the moral argument is no weaker.

However, many backslidings there may be on the one side or the other, the American and British peoples do share a tradition of life and a belief in such things as liberty and toleration and law. The nineteenth century might take these for granted; to believe in them in the twentieth century is to be a violent partisan. Both because of their material interests, and also because they are what they are, America and Britain must inevitably stand side by side in the great crises of world history. It would be wrong to forget this basic fact in the very proper anxiety to prevent another great crisis from arising.

But this does not by any means imply that British and American policy must always be identical in detail, and still less that one of the two should simply play second fiddle to the other. The inevitable concurrence of American and British policy is a long-term affair; it is concerned with the great mountain peaks of history, not with every hill and valley in between. When American policy runs to an extreme, as it tends to, there is no reason for the British to follow, or even to refrain from opposing it. Nor is there any excuse for British pusillanimity in being scared off what they think is the right path by a frown from Wash-

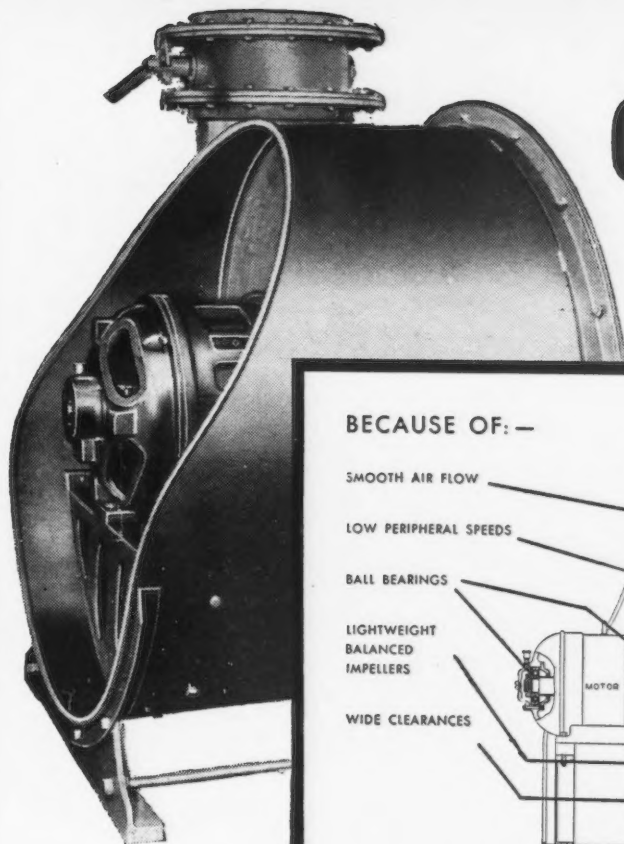
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ington. There has, for example, been far too much timidity in the British approach to France and the other countries of Western Europe to seek a measure of political accord and economic integration. It is true that Russian screams of rage at the very moment of a "Western bloc" have played some part in British hesitations; but so also have the intimations from Washington that a British "Good Neighbor" policy in Western Europe would be regarded as a sin against the doctrine of "One World."

In the Middle East also, there has been rather too much waiting upon positive American approval before British policies are initiated. On these issues—and on many others that might be cited—the only sound policy for British statesmanship is to go ahead with what seems wise and effective. It is proper to pause and inquire whether any substantial long-term interest of the United States is likely to be damaged or any genuine instinct affronted. But it is wrong to hang back because of angry newspaper editorials or ignorant accusations of "imperialism" or "power politics"—or even "appeasement." What counts is American policy in the long run, not what the Americans say it is at the moment.

It is, therefore, as unnecessary as it would be improper for British opinion to take sides in the Byrnes-Wallace quarrel. Shorn of the silly anti-British nonsense, much of what Mr. Wallace is saying (in the long letter to President Truman, for example, which is far more statesmanlike than the New York speech) is what many people in England are thinking—that Mr. Byrnes is going too far and too fast. But if Mr. Byrnes will retreat a step or two, he represents the active policy on foreign affairs which British opinion has always demanded from America. A Wallace awakened from childish nightmares about British imperialism, a Byrnes patient enough to wait and see whether a real Russian challenge develops, without provoking it—either of these should find a willing partner in British policy.



# QUIET

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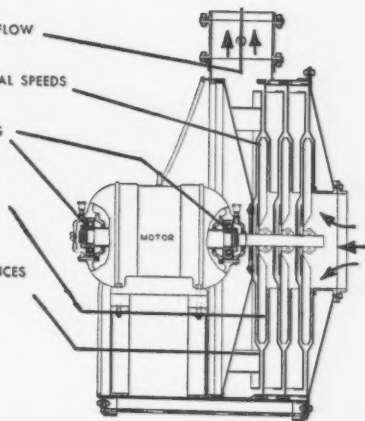
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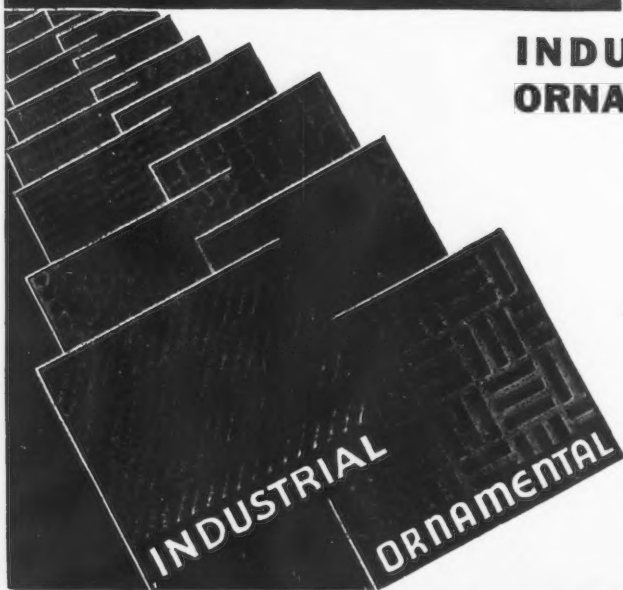
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DURA-CHROME for shearing hot or cold plate steel up to  
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NEWS OF INDUSTRY

**ASTM Organizes New  
Committee on Quality  
Control of Materials**

Philadelphia

• • • Because emphasis placed on  
quality control as a result of  
expanded production during the  
war accelerated the use of statisti-  
cal methods in the presentation  
and analysis of test data and the  
application of the science to the  
control of quality, the executive  
committee of the American So-  
ciety for Testing Materials has  
authorized the organization of a  
new committee E-11 on quality  
control of materials, which held  
its organization meeting in Phila-  
delphia earlier this year. At this  
meeting permanent officers were  
elected and a set of by-laws to  
govern the work of the committee  
was approved.

The officers and present member-  
ship of the committee are as  
follows:

- Harold F. Dodge, *Chairman*, Bell  
Telephone Laboratories, Inc.
  - A. E. R. Westman, *Vice-Chairman*,  
Ontario Research Foundation
  - O. P. Beckwith, *Secretary*, Alexan-  
der Smith & Sons Carpet Co.
  - A. W. Carpenter, The B. F. Good-  
rich Co.
  - C. W. Churchman, University of  
Pennsylvania
  - J. H. Curtiss, National Bureau of  
Standards
  - Karl Fetters, Youngstown Sheet &  
Tube Co.
  - G. H. Harnden, General Electric  
Co.
  - H. F. Hebley, Pittsburgh Coal Co.
  - A. C. Holman, Western Electric  
Co., Inc.
  - J. T. MacKenzie, American Cast  
Iron Pipe Co.
  - Joseph Manuele, Westinghouse  
Electric Corp.
  - E. G. Olds, Carnegie Institute of  
Technology
  - R. F. Passano, Bethlehem Steel Co.
  - A. I. Peterson, RCA-Victor Di-  
vision
  - A. G. Scroggie, E. I. du Pont de  
Nemours & Co., Inc.
  - L. E. Simon, Aberdeen Proving  
Ground
  - T. S. Taylor, U. S. Testing Co.
  - John Tucker, Jr., National Bureau  
of Standards
  - S. S. Wilks, Princeton University
- An advisory committee of seven



members has been appointed, consisting of the following:

H. F. Dodge, *Chairman*  
A. E. R. Westman, *Vice-Chairman*  
O. P. Beckwith, *Secretary*  
L. E. Simon (Term expiring in 1948)  
G. H. Harnden (Term expiring in 1948)  
H. F. Hebley (Term expiring in 1950)  
R. F. Passano (Term expiring in 1950)

The committee will function under the following statement of scope:

The committee is organized to promote the knowledge of quality control methods and their application to specifications and methods of test. By quality control methods is meant those methods that have been developed on a statistical basis to control the quality of product through the proper relation of specification, production, and inspection as parts of a continuing process.

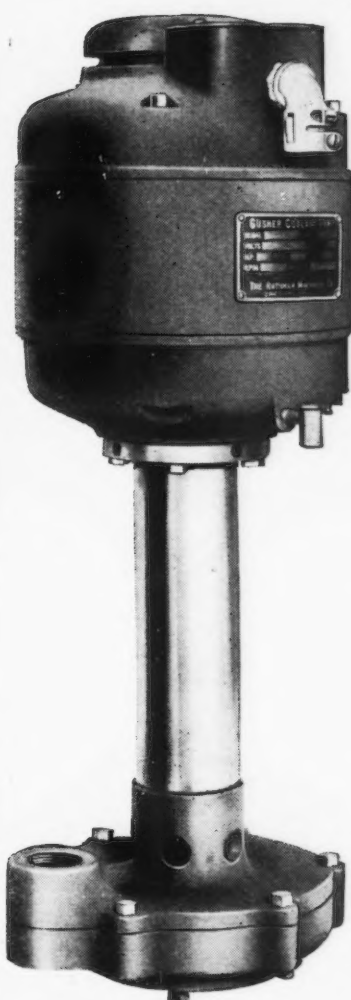
The committee is authorized to sponsor papers and discussions; to prepare reports, manuals and recommended practices; and to aid and advise the committees of the society on the application of quality control methods in: (1) the collection, analysis, interpretation, and presentation of data; (2) preparing specifications and methods of test; (3) establishing specified limits in specifications, including the designation of numerical requirements; (4) preparing acceptance sampling plans to be used for determining conformity to specifications; and (5) setting up sampling plans for control of quality in manufacture.

With the organization of this new technical committee there has been transferred to it the responsibilities of two technical committees of committee E-1 on methods of testing; namely, technical committee IX on interpretation and presentation of data and technical committee XI on designation and interpretation of numerical requirements. The A.S.T.M. Manual on Presentation of Data and the Tentative Recommended Practices for Designation of Numerical Requirements in Standards (E 29-40 T), prepared by these E-1 committees, have been transferred to the jurisdiction of committee E-11.

# ADAPTABLE

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Model TL7320

Yes, Ruthman Gusher Coolant Pumps are adaptable. Our line includes immersed types, tank units, pipe connected types, flange mounted and plain drive types, in capacities from 1/30 to 2 h.p.

They offer split second control of coolants, high flushing capacity, sturdy one piece vertical shaft and exclusive features available only on Gusher Coolant Pumps.

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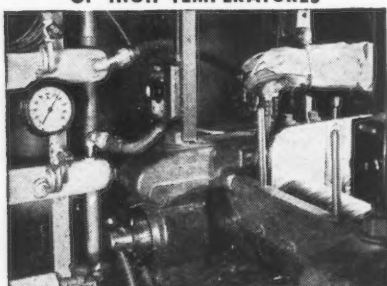
A MODERN PUMP FOR MODERN MACHINE TOOLS

# Silicone News



## DC Silicone Greases Save Bearings—

KEEP MACHINES RUNNING IN SPITE  
OF HIGH TEMPERATURES



DC 44 Grease in bearings of this steam heated two roll mill gives effective lubrication at 300°F. In this application complete freedom from bleeding is essential because any oil on the rolls ruins the material being milled.

In almost every industry there are bearings which fail too soon, causing costly shut-downs, because operating temperatures are too hot for petroleum greases. More and more maintenance men and lubrication engineers are prolonging the life of such bearings by using DC 44 Silicone Grease for operating temperatures up to 350°F. and at speeds up to 20,000 r.p.m. For temperatures up to 475°F. and speeds of 4,000 r.p.m., DC 41 Grease is recommended. For temperatures in the range of -70°F., DC 33 is used.

Extensive testing of DC Silicone Greases indicates that they have from 8 to 10 times the service life of high quality petroleum greases at high temperatures. Weight losses range from 3.3% to 4.6% after 40 hours exposure to 175°C. (347°F.) compared with losses of 34% to 58% for high grade petroleum greases under the same conditions. Bleeding after 16 hours at 110°C. is less than 2% for DC 33 and DC 44.

Additional information about DC Silicone Greases is contained in data sheet No. S 7-1. DC 996—DC Silicone Greases were first used to lubricate bearings of silicone insulated motors subjected to accelerated-life testing, which includes operation at temperatures of 200° to 310°C. (392° to 590°F.) and exposure to 100% relative humidity. In 2½ years of continuous testing none of these silicone insulated motors has failed. Specifications and methods for applying DC 996 are given in leaflet No. S 3-1.

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## NEWS OF INDUSTRY

TABLE VIII

Cost Per Metric Ton of Basic Openhearth Steel  
(In Italian lire)

Cockerill		Bagnoli	
Openhearth pig iron—0.200 tons at 176 L.....	32.20	0.250 tons at 154 L.....	38.50
Scrap—0.830 tons at 100 L.....	83.00	0.750 tons at 180 L.....	135.00
Total.....	118.20	Total.....	173.50
Ferroalloys and limestone.....	6.80	Ferroalloys and limestone.....	21.00
Manufacture:		Manufacture:	
Fuels.....	20.40	Fuels.....	16.80
Labor and wages.....	17.20	Labor and wages.....	10.60
Refractories and dolomite.....	3.00	Refractories.....	4.60
Ingot molds and equipment.....	2.55	Ingot molds.....	7.00
Maintenance.....	16.50	Maintenance.....	16.00
Subsidiary services.....	4.40	Subsidiary services.....	4.00
	64.05 64.05		59.00 59.00
Total.....	189.05	Total.....	253.50

## More Intergration For Italian Steel Sought

(CONTINUED FROM PAGE 121F)

Bagnoli used high grade ore, while Belgium used minettes from Lorraine, ore containing approximately 30 pct iron.

For the special production of openhearth pig at the Cockerill plant, high grade ores were imported from distant countries, as is practiced by most steel producing countries. Britain has to import appreciable quantities of high grade ores, as the production of its own mines is generally of low grade. Germany depends on imports for the largest part of its ore requirements. In the U. S. haulage from Minnesota to Pittsburgh is considerably more than the distance between the Mediterranean mines and any one of the large Italian blast furnaces. All the Italian furnaces are located on the sea, and require a single haul-

TABLE IX

Cost Per Metric Ton of Basic  
Bessemer Steel at Cockerill  
(In Italian lire)

Pig iron—0.990 tons at 150 L.....	148.50
Scrap —0.100 tons at 100 L.....	11.00
Cost of charge.....	159.50
Ferroalloys and limestone.....	10.00
Fuels and miscellaneous.....	2.20
Labor and wages.....	4.50
Refractories.....	0.80
Ingot molds.....	2.00
Maintenance.....	2.75
Subsidiary services.....	4.00
General expenditure.....	3.30
Total.....	29.55
Recoveries:	
Slag—0.240 tons at 110 L.....	26.55
	3.00 3.00
Total Cost.....	162.50

age of ore, instead of two or three as is the case in the United States with Mesabi ores.

On the other hand it is true that the majority of steel produc-

TABLE X

Cost Per Metric Ton of Blooms  
(In Italian lire)

Cockerill		Bagnoli	
Ingot—1.060 tons at 165 L.....	175.00	1.100 tons at 234 L.....	257.40
Butts (recoverable)—0.040 tons at 126 L.....	5.00	0.040 tons at 180 L.....	7.20
Actual ingot cost.....	170.00	Actual ingot cost.....	250.20
Fuels.....	0.60	Fuels.....	3.08
Energy (electric) 21 units at 0.05 L.....	1.05	25 units at 0.10 L.....	2.50
Labor.....	1.50	Labor.....	3.85
Supplies.....	0.55	Supplies.....	0.80
Maintenance.....	2.20	Maintenance.....	3.60
Equipment.....	0.80	Equipment.....	2.00
Subsidiary services.....	1.10	Subsidiary services.....	2.97
General expenditure.....	1.20	General expenditure.....	
Total manufacture costs.....	9.00 9.00	Total manufacture costs.....	18.80 18.80
Total Cost.....	179.00	Total Cost.....	269.00



In the analysis made in 1934 on the production of pig iron, Italy compared favorably with Belgium. It might appear that the same results can be reached from the investigation of costs of successive operations necessary to obtain steel from pig iron. Instead the cost analysis of steel production given in table VIII shows a different picture.

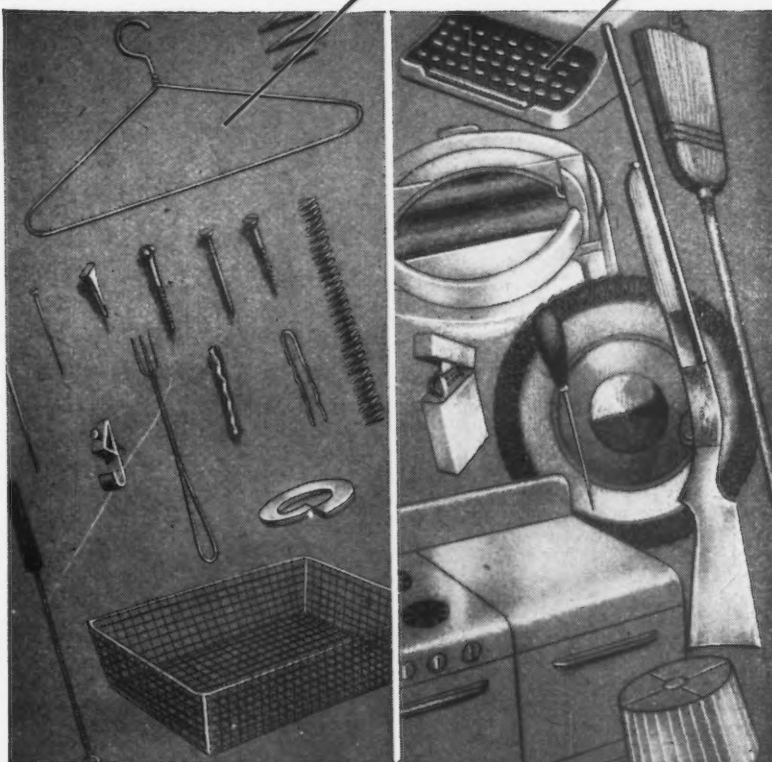
According to the comparison in this table, the cost of basic open-hearth steel at Bagnoli exceeded the respective cost at Cockerill, in spite of the fact that in Italy the unit costs of pig iron and labor were considerably lower. This was due almost wholly to the availability of cheap scrap in Belgium and of the cheaper ferroalloys available to Cockerill. In 1934 the price differential between Belgian and Italian scrap was caused by the storage of domestic scrap in Italy which necessitated importation from abroad, while Belgium had available considerable quantities of basic bessemer scrap, not used in the bessemer steel process, and which therefore exceeded the demand of the limited openhearth producers.

Bagnoli was at a considerable disadvantage in relation to Cockerill in the production of open-hearth steel, and at an even greater disadvantage in relation to basic bessemer steel. Table IX shows these disadvantages.

Comparative production costs for fabricating steel are given in tables X and XI, comparing the costs of the basic bessemer ingots from Cockerill with the cost of the openhearth ingots from Bagnoli.

From the tables it is evident that the manufacturing cost of steel sections at Bagnoli was more than double the cost at Cockerill. This applies also to labor expenditure, although Italian wage rates were somewhat lower. The difference resulted partly from the management's policy, in order to satisfy the customers and to effect

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162—THE IRON AGE, October 10, 1946

## NEWS OF INDUSTRY

economies of transportation, of working small orders for varying shapes consecutively. Thus rolling mills had a charge of work subdivided into a vast catalog of sizes and shapes which necessitated a continuous change of rolls.

There was a lack of rationalization among the many steelworks, and fabrication that should have been concentrated in a few plants was dispersed among approximately 50 plants. The market disadvantage of Bagnoli and of Italian rolling mills in general was derived from a general steel policy that could have been adjusted.

All the cost information is summarized in table XII.

The Italians drew the following conclusions from the costs summary:

- (1) The cost of pig iron produced in Italy was either equal to or lower than the costs of other countries, in spite of the necessity of having to import iron ore and coal.
- (2) The cost of steel blooms was high but could have been lowered by modernization.
- (3) The high cost of small sections and bars could have been reduced by radical changes of organization, personnel and manufacturing procedures.

The recognition of concepts summarized above, in the years preceding the second World War, led to the construction of two basic bessemer plants, and to some concentration of mass production in a few large steelworks. However, the greatest war damage was caused to the most modern plants and the war period prevented the realization of further projected plans. Therefore policies of adopting the more modern methods and equipment for an economic steel industry need to be established at the present time.

Many countries in Europe use basic bessemer steel rails, structural shapes, bridges, railway cars, sheet and tinplate, where a better quality steel is not necessarily needed. There should be no hesitation to introduce into Italy a method of production adopted by other countries, which could bring about a notable decrease of steel



costs in all those cases in which basic bessemer steel gives technically the same results, or even better results than openhearth steel.

It is significant that the basic bessemer process is not used in the United States, but it would be a grave mistake to infer that the process should not be used in Italy. The byproduct bessemer slag finds a ready market as a fertilizer in Italian agriculture and considerably reduces the necessity of importing phosphates.

In order to decrease the demand on its foreign credit it would be advantageous for Italy's economy to adopt such a plan for the solution of its domestic requirements of phosphorus soil conditioners. There are plentiful supplies in the Mediterranean basin of the cheaper phosphorous ores that can be used in the production of basic bessemer pig.

It is advisable for Italian industry to adopt the basic bessemer process whose low costs will aid them in competing with European steel producers, and on the other hand to retain the openhearth process only when this quality steel is required.

To establish the industry along these lines, it is necessary to secure the additional production of one or two outstanding ore mines in the Mediterranean, in order to insure a continuous supply of raw material. It would also be necessary to establish efficient transportation systems, with modern loading and discharging facilities, in order to minimize transportation costs. It would be advisable for the industry to maintain its own fleet of vessels, especially designed for the haulage of iron ore so that prompt and efficient deliveries could be guaranteed.

By adopting manufacturing methods that would lead to competitive production costs, Italy could capitalize on the location of its production plants near ports.

The adoption of the above policies of integrated plants with modern steel producing and fabricating methods resulting in lower production costs may eliminate existing firms using the scrap process who cannot modify their operations to meet these costs. Certain of these firms using the scrap

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PROCESS**

**W**ARD off costly derusting and recoating! Protect your ferrous rods and wire between drawing operations with the Oakite CrysCoat Process.

Used as an undercoat before liming in high carbon rod-drawing operations, the Oakite CrysCoat Process produces a non-hygroscopic crystalline phosphate coating that serves as an effective rust retardant. That means less wire returned for re-cleaning and re-coating . . . better blue-gray color. By putting a parting layer between metal and die, the Oakite CrysCoat Process provides maximum die lubrication . . . often lengthens die life 150 to 300%. And because there's less oxidation, processed wire requires shorter pickling time!

### In-Plant Help . . . FREE!

Ask your nearby Oakite Technical Service Representative for advice on this or any other cleaning problem. He'll gladly make on-the-spot tests and helpful recommendations. Just give him a call! Or, write for FREE Oakite CrysCoat Process Service Report which gives the step-by-step details of this rust-retarding process. On letterhead, please.

**OAKITE PRODUCTS, INC.**  
28A Thames Street, New York 6, N.Y.

*Technical Service Representatives Located in All  
Principal Cities of the United States and Canada*

**OAKITE** *Specialized*  
**CLEANING**  
MATERIALS • METHODS • SERVICE

TABLE XI

Cost Per Metric Ton of Small Sections and Bars  
(In Italian lire)

Cockerill (250 mm rolling mills)		Bagnoli (300 mm and 250 mm rolling mills)	
Blooms—1,060 tons at 198 L.	210.00	1,140 tons at 269 L.	306.60
Butts—0,035 tons at 121 L.	4.20	0,100 tons at 180 L.	18.00
Total	205.80		288.60
Manufacture:			
Heating	8.80		9.10
Motive power	6.60		12.00
Labor	9.50		19.20
Supplies	1.10		2.50
Rolls and equipment	5.00		14.00
Maintenance	5.50		14.00
Subsidiary services	3.85		13.00
General expenditure	6.60		15.00
Total manufacture	46.95	46.95	88.80
Total cost	252.75		387.40

process will survive because they can profitably concentrate on production of quality steels or special products (castings, forgings, etc.). These steelworks based on scrap in the complete network of the iron and steel industry would assume a marginal position utilizing electric power or cheap domestic lignite available in Italy, and importing scrap only when the market is particularly advantageous.

Italy, although almost devoid of fuels, is comparatively rich in hydroelectric power, particularly from April to November when there is thawing in the mountains. It is comprehensible that in certain localities electric furnace plants can be developed both for the production of steel and pig iron.

The fabrication of electric pig iron is, however, a marginal problem of the hydroelectric industry, as its expansion is strictly limited by the availability of surplus power that cannot find a better

utilization. It may be stated that electric pig iron is a noteworthy byproduct of the Italian hydroelectric industry's seasonal excess of cheap power.

The electric furnace steel fabrication shows very favorable prospects utilizing this cheap hydroelectric power for the production of quality and special steel. Construction industries, automobile industries, and machinery builders are tending in some cases towards utilization of high tensile steels in smaller sections, instead of the heavier low quality sections.

Therefore, important developments in the production of electric furnace steel are apparent. Italy, owing to its relatively abundant power, may be destined to play a notable part in these developments.

In spite of the necessity of importing raw materials for the steel industry, Italy's past experience indicates that competitive costs might be obtained if a different

TABLE XII

Summary of the Difference of Costs Between Bagnoli and Cockerill  
(per metric ton of production)

	Cockerill Cost in lire	Bagnoli Cost in lire	Difference
Openhearth pig iron	176	154	22
Basic Bessemer pig iron	149		
Basic openhearth steel	194	234	40
Basic bessemer steel	163	*	71
Blooms	179	269	90
Small sections and bars	253	387	134

\* The comparison is made between basic bessemer steel at Cockerill and basic openhearth at Bagnoli.



policy of production were adopted.

The resulting drop in domestic production costs will create a general increase in domestic uses for housing, agricultural and mechanical applications. This will raise the utilization of steel per person in Italy above its present position of being one of the lowest in the western world and may favorably increase the standard of living in the country. A comparison of the utilization of steel during the years 1926 to 1935 is as follows:

	Kilos per Person
U. S. A. ....	300
France and England..	130
Germany .....	120
Italy .....	54

Export of certain steel products could economically be made from Italy, particularly of highly finished steel products in the manufacture of which relatively cheap Italian skilled workmanship would be utilized.

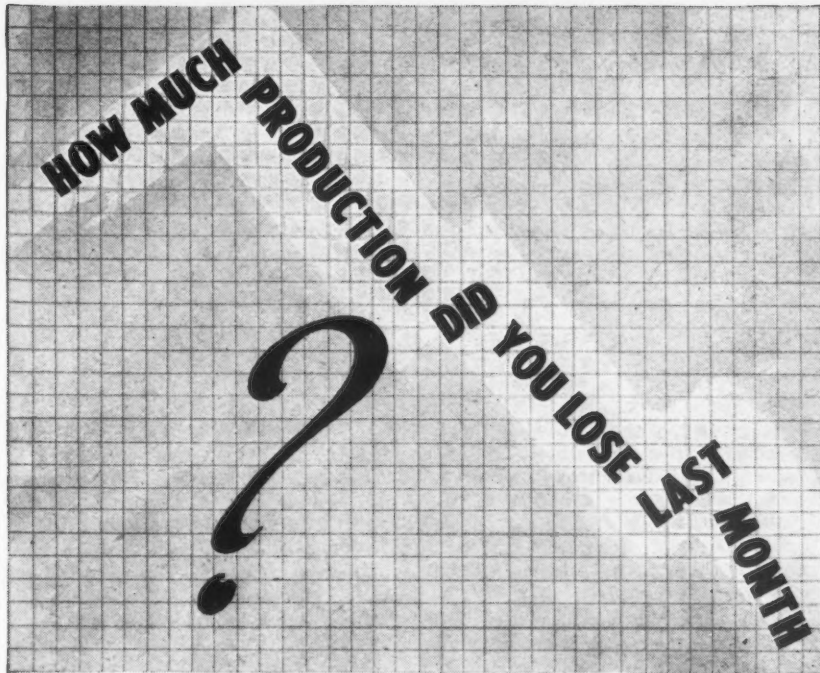
The mechanical industries being able to take advantage of lower costs could create a larger export market, and expanding beyond the narrow confines of production for home consumption, could adopt special machinery, equipment, and modern manufacturing systems which are only economical for sizable production.

To date, imports of iron ore, scrap and coal, have burdened the foreign credit balance for Italy. The acquisition of foreign credits through expanded exports of certain steel commodities would help Italian economy to make up for these imports. The export trade of Italian steel products and equipment should be expanded beyond the costs of the imports of raw materials, so as to permit also the importation of all those semi-finished steel products or steel commodities that cannot competitively be produced in Italy.

### Praises NHA Bonus Plan

Washington

... Praising NHA's premium payment plans, Housing Expediter Wilson W. Wyatt said on Oct. 5 that they have resulted in production increases in four industries, the outstanding rise being in output of housing-type convactor radiators. Production of these radiators is said to have jumped 9 per cent in July over June.

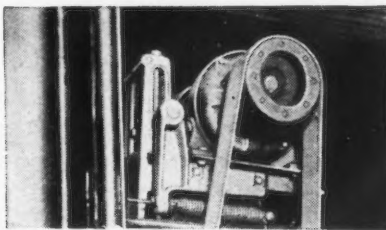


Shutdowns are costly—in man-hours and production. How many lost hours—and dollars—could you have saved last month with Schieren Leather Belts? When machines are stopped to take up belt slack . . . when difficult operating conditions destroy belting long before its normal life expectancy—you lose production that could have been saved by installing Schieren Leather Belts.

Schieren Leather Belts are built to withstand torturing oil, water and abrasive conditions . . . to permit normal operating conditions at all times . . . to cover a greater pulley area—deliver maximum speed, *extra* RPM.

Schieren Leather Belts take the toughest job in their stride—yet they cost no more than other belts. They pay for themselves quickly—in full-time, uninterrupted machine output. Regardless of your problem, the custom-built performance that is standard with Schieren Leather Belts will fit your most exacting requirements.

For 78 years, CHAS. A. SCHIEREN COMPANY has solved countless power transmission problems. We have constantly maintained, throughout the years, the high quality and complete dependability of our products. For complete, specialized service on your belting, packing or strapping problems, consult us. Do it today—our years of experience are at your service.



We are national distributors of Rockwood Belts.

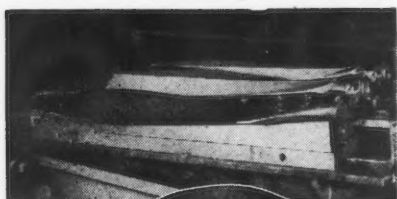
Let us send you free book on SHORT CENTER DRIVES data which show how pivot bases give

1. Automatic Belt Tension
2. Boost Overload Capacity of Drives.
3. Eliminate any possibility of slip.
4. Increase machine output.

**CHAS. A. SCHIEREN COMPANY**  
LEATHER BELTINGS • SPECIALTIES  
HYDRAULIC PACKINGS

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Dies built of **Strenes Metal** are usually available for use quicker because there is far less machining time involved—a cost economy.

**Strenes Metal** dies invariably deliver several times the usual number of stampings between redressings, regardless of the depth of the draw—a production advantage.

Heaviest users of **Strenes Metal** dies include car, truck, tractor, farm implement manufacturers; also stove, refrigerator, casket and vault builders.

Perhaps you should be using **Strenes Metal** dies. Send in your drawings for study and estimates.

THE  
**Advance Foundry Co.**

100 SEMINARY AVE.  
Dayton 3, Ohio



### WAA Sets Up New Sales Planning Division To Speed Surplus Sales

Washington

• • • Designed to expedite sales of war surpluses, WAA has established a Sales Planning and Control Div. in the headquarters of the General Disposal Office. Gustav A. Shwarz, former director of the Materials and Supplies Div., has been made head of the new division and will work out new or improved sales program, standards and procedures for surplus disposal.

Analysis by locations of surplus property inventories and recommendations for solving specific problems of the various commodity divisions and regional offices, WAA said, will be the main functions of the new group.

Meanwhile, WAA has announced broadening of its advertising agency program with a view to facilitating its regional surplus sales program now underway throughout the United States.

Northrop Clarey, deputy administrator for information and advertising, said that henceforth advertising will be divided into two phases, national and regional.

Fuller & Smith & Ross, Inc., which has handled government surplus property advertising for almost 2 yr, will continue to direct all national programs. This agency will place advertising for real property, aircraft, consumer and capital goods, as well as handling policy and institutional matters.

Upon the recommendation of FSR who established in July the original basic network of eight agencies to service WAA regional offices, additional agencies will be appointed to provide on-the-spot service in other regions of WAA, where the regional director so desires. The eight agencies at the present time servicing regional advertising for WAA are: Allen & Reynolds, Omaha; Bruce Brewer & Co., Kansas City; Connor Advertising Agency, Denver; D'Arcy Advertising Co., St. Louis; Knox Reeves Advertising, Inc., Minneapolis; Liller, Neal & Battle, Atlanta, and McCarty Co., Los Angeles, San Francisco, Seattle

and Dallas. Fuller & Smith & Ross, in addition to the national advertising, has been handling regional advertising in Chicago, Detroit, Cleveland, Richmond and New York.

Each regional director will furnish Washington headquarters with the name of the local agency he considers best qualified to render the special type of service required in his area.

Selections, it was stated, will be based upon previous experience, recognition by newspaper and publishers' associations, and standing in the agency business.

Separate individual contracts will be signed with WAA in each region by each of the selected agencies. All agencies will be responsible to Washington for adherence to policy and performance of contract. No contracts have been issued or signed yet.

### Canadian Steel Strike Cuts Ingot Output In July to Monthly Low

Toronto

• • • With the steel strike entirely closing down two big steel mills and the other operating only about 60 pct of normal, Canadian production in steel ingots and castings during July fell to the lowest monthly total for the year. For July, output of steel ingots and castings totaled 135,914 net tons, compared with 214,861 tons in June and 229,161 tons in July 1945. Steel furnace charges in July included 52,724 tons of pig iron; 54,334 tons of scrap of consumers' own make and 43,355 tons of purchased scrap.

For the seven months ended July 31, production of steel ingots and castings totaled 1,585,553 net tons, compared with 1,824,779 tons in the 1945 period and 1,747,001 tons in 1944.

Following are comparative monthly production totals for 1946 in net tons:

1946.	Steel Ingots	Castings
January .....	236,479	8,144
February .....	226,273	7,620
March .....	240,589	8,528
April .....	239,463	8,056
May .....	251,697	7,929
June .....	208,296	6,565
July .....	130,754	5,160
Total 7 Months....	1,553,551	52,002



## Chemical Group Opens Clearing Houses For Chemical Engineers

New York

...With the opening of a New York regional employment clearing house for chemists and chemical engineers, the American Chemical Society has completed organization of a nationwide employment service for the chemical profession with offices in seven key cities, it has been announced by Alden H. Emery, of Washington, D. C., national secretary of the society.

Similar in purpose to the clearing house conducted at the society's national meetings each spring and fall, the regional service will function throughout the year as a liaison agency, bringing together employers looking for chemists and chemical engineers, and society members and student affiliates desiring such contacts. One of the immediate aims of the service, according to Mr. Emery, is to help alleviate the present critical shortage of technical manpower in the industrial and educational laboratories of the nation.

The New York office, which will serve the Middle Atlantic region, has been set up in Room 93 in the Chemists' Club Bldg., 50 E. 41st St., under the direction of Dr. Walter Baeza, a member of the society's national council. The service has its headquarters in Washington at the American Chemical Society Bldg., 1155 16th St., NW, and also maintains offices in Atlanta, Boston, Chicago, Houston and San Francisco.

Through the facilities provided by this chain of offices, an employer anywhere in the United States can obtain information about any chemist or chemical engineer in the country who is seeking employment by visiting the nearest regional clearing house. Records of all registrants are available in duplicate form at all seven offices, so that an employer examining the data at one office will be able to make a complete canvass of available manpower in his field.

By the same token, any of the society's 48,000 members who is looking for a position has only to register with the service to place himself under consideration for any opening in the country which



## AMPCO METAL

eliminates delays caused  
by metal shortages . . .

The ferrous metal shortage is *another* good reason  
for using Ampco Metal and Ampcoloy Bronzes

*Here are  
3 big  
advantages*

- 1 It's easier to get than ferrous metals today, and adaptable to many applications.
- 2 Increases service life of parts as it has high physical properties, excellent wear characteristics and corrosion resistance.
- 3 Increases the value of your product through longer life, better performance, and increased service values.

You can convert the ferrous metal shortage from a handicap to an advantage by specifying Ampco Metal or Ampcoloy for parts now made of iron or steel. Avoid the production slow-down caused by limited materials and priority restrictions; give your product the extra quality afforded by Ampco Metal and Ampcoloy Bronzes.

This aluminum bronze alloy is characterized by its structural uniformity and superlative wearing qualities — can be produced by centrifugal- or sand-casting, extrusion, or forging processes according to your requirements. Ampco offers complete facilities.

Ask your nearby Ampco engineer to help you select the right grade for your requirements. Write for Bulletin 72.



A-33 The Metal without an Equal

**AMPCO METAL, INC.**

DEPT. 1A-10 • MILWAUKEE 4, WISCONSIN

Field Offices in Principal Cities



Greater Tonnage  
Per Edge of Blade

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**AMERICAN**  
SHEAR KNIFE CO.  
HOMESTEAD · PENNSYLVANIA

he is qualified to fill. Application blanks are available at all offices.

In addition to the New York office, of which Dr. Baeza is in charge, and the Washington headquarters, under the direction of William B. Lodder of the society's staff, the following regional clearing houses are now in operation:

**New England**—Boston, Room 503, Boston University, 84 Exeter St., Dr. Chester M. Alter in charge.

**Southeast**—Atlanta, Room 153, Chemistry Annex, Georgia School of Technology, Third and Fowler Sts., Dr. W. M. Spicer in charge.

**Midwest**—Chicago, Room 744, 35 East Wacker Drive, Dr. Marvin J. Hall in charge.

**Southwest**—Houston, Room 212, Chemistry Bldg., Rice Institute, Dr. W. O. Milligan in charge.

**Pacific Coast**—San Francisco, 585 Howard St., Dr. Sterling L. Redman in charge.

## C-I Adopts Graduate Program for Workers

Chicago

• • • Carnegie-Illinois Steel Corp., subsidiary of U. S. Steel, has inaugurated a program of graduate study in affiliation with the Illinois Institute of Technology and Indiana University, as a means of encouraging advanced technical study.

The courses offered are designed primarily for those employees who have completed a 4 yr college course and who are interested in securing a Master's or Doctor of Philosophy degree, although the classes will also be attended by employees who do not seek college credit.

During the fall semester courses will be offered in metallurgy of iron and steel, and general accounting principles, and will be held at the Chicago Vocational school in South Chicago and the Emerson school in Gary, Ind.

Walter E. Hadley, manager of operations for the Chicago district of Carnegie-Illinois Steel Corp., will open the program at the Chicago Vocational school and James M. Darbaker, assistant manager of operations, will launch the program in Gary. Other specialists in metallurgy and accounting at the Carnegie plants will assist the head instructors in conducting the courses.

## Gallup Polls

(CONTINUED FROM PAGE 113)

are willing to have a son of theirs go into the service for a year and a half—the present draft period—to make up an Army and Navy of that size. This finding is in line with poll results over the past 3 yr which have constantly shown the American public in favor of peacetime military conscription.

In sounding out the country's opinion on the size of the Army and Navy in the postwar years, the institute gave voters as reference points the size of the fighting forces in the years immediately preceding the outbreak of World War II, and also the size of the Army and Navy during the war. Each voter was then asked to indicate how big he thought the Army and Navy should be 5 yr from now.

The questions and the vote follow:

"Before the war, the regular Army of the United States had about 190,000 men. During the war it had about 8,000,000 men. Just making your best guess, about how many men should we have in our peacetime Army about 5 yr from now?"

Fewer than one voter in 14 wanted to go back to the old peacetime strength of 190,000, or less.

The median average of the replies indicated a force of 1,000,000 men as the typical choice.

"Before the war, the regular Navy of the United States had about 140,000 men. During the war it had over 3,000,000 men. Just making your best guess, about how many should we have in our peacetime Navy about 5 yr from now?"

The median average of replies also came to 1,000,000.

Each voter who gave his views on the size of the fighting forces was asked:

"Would you be willing to have a son of yours go into the service for a year and a half to make up an Army of this size?"

The vote:

Yes .....	80
No .....	11
No opinion .....	9

Virtually the same number indicated their willingness in the case of the Navy.

People with sons who are now of draft age or who will come of draft age in the next few years expressed the same willingness to have them go into the armed forces as did the rest of the country.



## Beryllium Processes Used in Germany Told In Commerce Report

Washington

... Beryllium production processes used by the Deutsche Gold und Silber Scheide Anstalt at Frankfurt, Germany, are described in a report now on sale by the Office of Technical Services, Dept. of Commerce. Before operations were halted at the end of the war, the plant had achieved a maximum monthly production of 160-180 kg of pure beryllium.

The report was prepared by W. B. C. Perrycoste for the British Intelligence Objectives Sub-Committee.

The manufacturing process was divided into two parts: Production of pure anhydrous beryllium chloride from the mineral beryl, and electrolytic production of metallic beryllium.

In the first part of the process, beryl ore was ground in a dry ball mill, mixed with lime in a drum, and then fused in a rotary kiln. To separate the silica and lime from the other oxides present, the slag was disintegrated by a water quench and then dried. The dry clinker was treated with sulfuric dioxide to form sulfates of the soluble oxides.

Silica and calcium sulfate were removed by filtration. A hot ammonium sulfate solution was then added to the hot filtrate, and the alum in the mixture was crystallized out. Iron salts were removed from the solution by adjusting the acidity and by the addition of hydrogen peroxide and calcium carbonate. A sludge of ferric hydroxide and calcium sulfate was precipitated and removed by filtration.

The resulting solution was pumped into a circular-stirred vessel, and ammonia gas was passed into the solution until all the sulfate was neutralized and beryllium hydroxide was precipitated. The precipitated beryllium hydroxide was filtered, dried, briquetted with organic binder and charcoal, extruded in the form of rods, carbonized, and then chlorinated. Purification of the resulting crude beryllium chloride by distillation followed.

The electrolysis process was carried out in nickel crucibles

Anticipate Temperature Changes

Eliminate Overshoot and Undershoot with

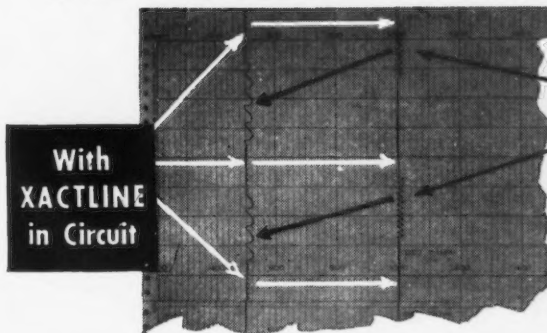
## The New XACTLINE Straight Line Temperature Control



XACTLINE is created for *anticipating* process temperature requirements. It performs efficiently on any type of electrically heated furnace, oven or other industrial equipment employing a millivoltmeter or potentiometer type controlling pyrometer ... or gas-fired equipment operated with solenoid or motor controlled valves. XACTLINE eliminates the excessive saw-tooth curves indicative of costly overshoot or undershoot temperature variations.

XACTLINE's extreme sensitivity anticipates the most minute heat variation on both cooling and heating cycles, causing an instantaneous power on-off response. Power on-off cycles as short as 3 seconds have been attained. That's why XACTLINE gives you the finest, most accurate, trouble-free and inexpensive temperature control regulator available.

**NO gears, cams, shafts, bearings or other rotating or sliding parts.**  
Xactline's simple design eliminates usual repair and maintenance.



Without  
XACTLINE  
in Circuit

**THE PRECISE CONTROL FOR ...** Tempering-Drawing ... Iso-Thermal Quenching ... Al and Mg Treatment ... Accurate Heat Treating ... Sintering ... Metallic Baths ... Plastic Molding ... and other precise temperature control applications.

Laboratory tested and adjusted for immediate operation. Price complete F. O. B. Factory ..... **\$79.50**

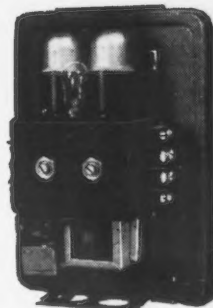
Write for the new XACTLINE data folder today!

**GORDON  
SERVICE**

**CLAUD S. GORDON CO.**

Specialists for 32 Years in the Heat Treating  
and Temperature Control Field

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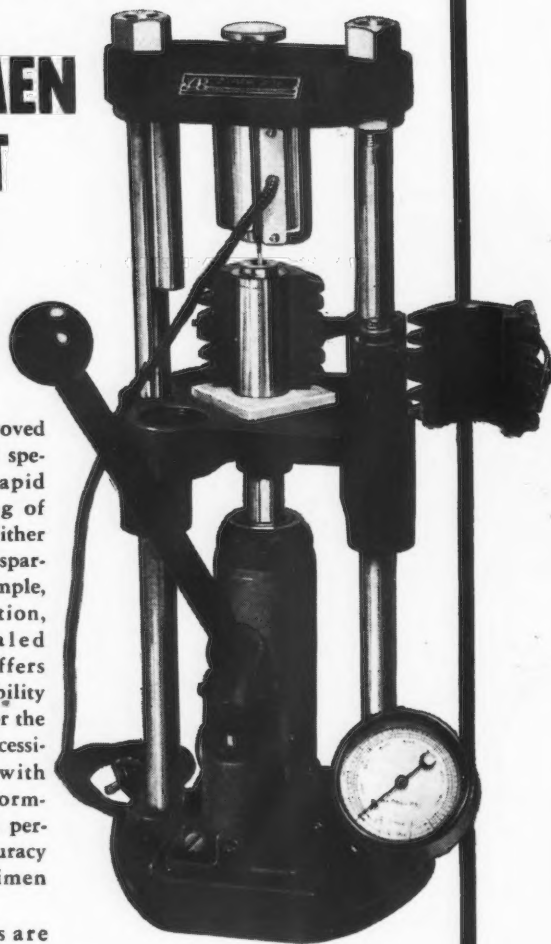
# Buehler

## SPECIMEN MOUNT PRESS

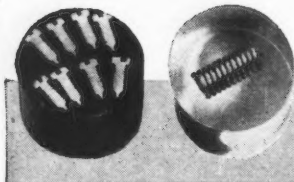
No. 1315

This new, improved model is designed specifically for the rapid precision molding of specimen mounts, either in bakelite or transparent plastic. The simple, rugged construction, without concealed working parts, offers maximum accessibility and convenience for the operator. This accessibility combined with the smooth performance of this press, permits speed and accuracy in molding specimen mounts.

Molding tools are lapped finished for close tolerance with a perfect fit. The fast working solid heater can be raised and the cooling blocks swung into position without releasing pressure on the mold. This rapid cooling permits removal of transoptic mounts in a few minutes. Heater and cooling blocks need not be removed from the press thus eliminating the possibility of accidental burns in handling these parts. This model press will develop pressure up to 10,000 lbs.



THE BUEHLER LINE OF SPECIMEN PREPARATION EQUIPMENT INCLUDES—  
CUT-OFF MACHINES • SPECIMEN MOUNT PRESSES • POWER GRINDERS • EMERY PAPER GRINDERS • HAND GRINDERS • BELT SURFACERS • POLISHERS • POLISHING CLOTHS • POLISHING ABRASIVES



## Buehler Ltd.

A PARTNERSHIP

**METALLURGICAL APPARATUS**  
165 West Wacker Drive, Chicago 1, Illinois

with external auxiliary heating. The melt consisted of a mixture of equal parts of beryllium chloride and sodium chloride. The metal content of beryllium obtained from the electrolysis process generally ranged between 98 and 99 pct, according to the Germans.

Both processes are described in detail in the report, which includes flow sheets.

Orders for the report (PB-25668; photostat, \$1; microfilm, \$1; 12 pages) should be addressed to the Office of Technical Services, Dept. of Commerce, Washington 25, D. C., and should be accompanied by check or money order, payable to the Treasurer of the United States.

### WAA to Offer Surplus Lead, Tin-Base Solder Washington

• • • Declaring that it will help alleviate reconversion problems in housing, automotive, electrical and many other fields, WAA has announced that approximately 2,500,000 lb of surplus government-owned lead and solder, valued at nearly \$1,000,000, will be offered for immediate sale.

Believing that surplus lead and tin-base solder were not moving rapidly enough under former sales methods, Robert M. Littlejohn, War Assets Administrator, notified all regional directors to make available for sale at once their full inventories of this material.

Solid solder (bar, wire, etc.) will be offered at fixed prices based on the current market price for the metal content less 1¢ per lb. Acid core and rosin core solder will be offered on a sealed bid basis.

All sales will be made according to CPA Direction 15 to PR 13, which limits sales to smelters and reprocessors who furnish certificates as to their qualifications, and such other persons who have been specifically authorized by CPA.

Activity in the carbide field continues good, and it is reported that due largely to non-tool uses, the volume of carbide sales is continuing well above prewar levels. A factor in the WAA situation that is receiving attention is that only about 20-25 pct of the dealers licensed to sell are now taking an active part in marketing surplus machines.